Technical Criteria

U.S. Army Physical Fitness Facilities

Developed for the Corps of Engineers
by
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October 2003

I Executive Summary

II Design Concepts

III Functional Relationships & Module Design Criteria

IV Building Design Criteria

V Appendix

I Executive Summary

A. Summary of Findings

Facility Allocation

Four Physical Fitness Facility (PFF) building programs are developed and presented herein. The PFF buildings are allocated on the basis of authorized population (AP) which includes 100% of active duty military and 25% of their dependents. Retirees are not counted in the AP at this time. DoD civilians are included at 10% only if they exceed 60% of the total workforce for CONUS installations. OCONUS installations are authorized at 100% of the civilian population in their AP. The four PFF total building program areas include the following:

X-Small	251 to 1,000 AP	27,771GSF (Gross Square Feet)
Small	1,001 to 3,000 AP	44,347GSF
Medium	3,001 to 6,000 AP	64,799GSF
Large	6,001 to 10,000 AP	89,448GSF

To calculate PFF building program for APs that exceed 10,000, an "Increment" building program is provided to increase the Large building program. The Increment program is intended to serve each additional 5,000 persons over 10,000 and includes 30,677SF. Thus, a total AP of 20,000 would require a Large PFF of 89,448SF + two 30,677SF Increments for a total of 150,802SF.

Facility Evaluation - Program Area

A breakdown of the Critical Function Modules (CFM) or components in the PFF is provided on page 5. Existing and new facilities should be inventoried and measured to assess compliance with these program areas. A PFF is considered to be in compliance with the PFF requirements when the following occurs:

- *If Fitness, Exercise and Shower/Locker/Toilet CFM components and their subcomponents individually meet a minimum of 95% of the net square foot required space, the CFM are considered in compliance.*

- *If the number of Racquetball or Squash Courts required in the Structured Activity Component is met, even if the courts are smaller than the required area, the component is considered to be in compliance. If compliance is not met, the required courts should be added by using a net increase of 850SF per court.*

- *If the Gymnasium component has the required number of courts sized at 50'x94' regardless of whether the required bleacher and storage areas are met, the Gym Component is considered to be in compliance. If this requirement is not met, new Gymnasium modules should provided per the PFF Space Allowance Table shown on page 5.*

- *If there is one track, and the gross area of the PFF meets area required to serve the AP, regardless of whether the track meets the required CFM area, this component is considered to be in compliance.*

- *If PFF components are brought into compliance with the above standards and the facility is a maximum of 10% over the allowed gross square foot area, the facility is considered to be in compliance. If the component sizes cannot be sized to meet the space standards defined above without exceeding a 10% overage, the PFF should be renovated or replaced to achieve a more efficient building design.*

Facility Evaluation - Quality Standards

Standards for new construction should meet the quality standards described in Section IV - Building Design Criteria. Renovation of existing facilities should be evaluated on a case by case basis.

II Design Concepts

A. Background

History of Development

Headquarters, Community and Facility Support Centers (CFSC), with the Corps of Engineers, have developed new design standards for Physical Fitness Facilities (PFF) for military bases in and out of CONUS. This report presents four PFF buildings to serve authorized populations ranging from 250 to 10,000. The facilities are categorized as X-Small, Small, Medium and Large. Standard increments have also been developed to accommodate populations over 10,000.

In order to function as a PFF, a facility must, at a minimum, include the following Critical Function Modules (CFM):

- Fitness Module (cardiovascular, circuit and free weight areas)
- Exercise Module (exercise rooms for instruction i.e. aerobics)
- Structured Activity Module (racquetball)
- Gymnasium Module (suitable for basketball and volleyball)
- Indoor Jogging Track
- Locker / Shower / Sauna Module

To test the adequacy of the indoor spaces for each PFF, national participation statistics were used to predict the recreational interests of active duty personnel. The national participation statistics, from a civilian survey of approximately 50% men - 50% women, were adjusted to fit a military base demographic of 80% men - 20% women. National survey responses were narrowed to the 18-44 year age group which represents 96.9% of the active duty army personnel.

Each module was tested and adjusted to verify its ability to accommodate the recreation, fitness and health interests of Active Duty (AD) personnel during peak times. Peak use varies from activity to activity. For activities requiring instruction or teams, peak use fluctuates between 50-60% of the hours of operation. For walk-in and individual activities such as fitness or running peak use varies between 80-90% of operating hours. The total hours of operation are 100 per week and reasonable attendance is assumed. Utilization worksheets for all four facilities are provided in the Appendix.

Findings and Recommendations

Utilization testing of Fitness, Exercise and Non-Structured Modules confirms that program areas are adequately sized to meet demand even when civilian statistics for fitness are nearly tripled. Module areas that fall short of meeting peak demand are Gymnasium (Medium and Large), Racquetball (Medium and Large) and Jogging Track (Large).

Recommendations

Gymnasium Module

a) Constructing additional courts is not recommended to meet the short fall. A 50' x 94' court is a large area relative to the number of participants that can be accommodated for a basketball or volleyball game. Constructing and maintaining new courts is not an economically feasible solution to providing more game time. Programming half-court games, extending program hours, and providing outdoor courts are all viable alternatives.

b) Recreation trends over the past ten years show steady interest in basketball but a downward trend in volleyball. Overall, national participation for volleyball for all age groups dropped from 25.1% in 1989 to 11.7% in 1999. This trend may result in a lower demand for volleyball court time.

c) A contingency space has been programmed into each Physical Fitness Facility. In smaller facilities, this space does not represent an area large enough to accommodate a full court (4,700SF). However, this Structured Activity Space can be used to accommodate a multipurpose area for court overflow or additional racquetball or squash courts, spinning studio, climbing wall, gymnastics facility, batting cages or golf driving / putting range. Larger facilities may allocate this space for additional gymnasium courts, in-line hockey or indoor soccer. This activity space should be programmed on a case by case basis to meet demand.

Racquetball Court

a) Recreation trends over the past ten years show a steady decline in racquetball of 8.2% in 1989 to 3.2% in 1999. Meeting the shortage in peak demand can be satisfied by using the Structured Activity Space for an additional court. The contingency space for every building size easily accommodates an additional racquetball or squash court.

Jogging Track

a) Exercise walking, jogging and running are popular activities. Walking has grown 20% over the past ten years and is becoming a staple of recreational activity for all age groups. National statistics do not separate survey responses by indoor track, treadmill or outdoor participation. Notwithstanding, each facility will provide a minimum of one suspended track surrounding the gymnasium. Facilities in extreme climates can expand track areas by looping the track around other indoor components. Need should be reviewed on a case by case basis.

B. Physical Fitness Facility (PFF) Space Allowance Table

Net and gross areas for four PFFs (X-Small, Small, Medium, Large) are itemized below. These spaces have been sized and tested for ability to meet peak demand based on a recommended square foot per person area published by the National Intramural-Recreation Sports Association (NIRSA) Space Standard for Indoor Facilities.

CFM Component	NIRSA Recommended Area
Exercise Module - Aerobics	50SF per participant
Exercise Module - Non-Structured	125SF per participant
Gymnasium Court - Basketball	14 participants + 4 rotating in
Gymnasium Court - Volleyball	16 participants + 4 rotating in
Fitness Module	50SF per equipment station
	65SF per free weight station
Structured Activity - Racquetball	4 participants per 800SF Court
Indoor Track	1 runner/ 20 lineal feet

An "Increment" program area is provided to increase the Large facility to serve authorized populations that exceed 10,000. The Increment area will serve 5,000 persons. Thus, a population of 20,000 requires a Large PFF building area plus two Increment building areas.

CRITICAL FUNCTION AREAS & TOTAL PFF BUILDING AREA		X-SMALL (251-1,000) population	SMALL (1,001-3,000) population	MEDIUM (3,001-6,000) population	LARGE (6,001-10,000) population	INCREMENT 5,000 Incremt. over 10,000 pop
FITNESS MODULE	Cardiovascular Area	550SF	1,350SF	2,550SF	4,000SF	2,000SF
	Circuit	800SF	1,150SF	1,500SF	2,300SF	1,150SF
	Free Weight Area	975SF	2,145SF	3,250SF	5,200SF	2,600SF
	Number of Stations	42	83	131	206	103
	Subtotal Fitness	**2,325SF**	**4,645SF**	**7,300SF**	**11,500SF**	**5,750SF**
	Storage Allocation	10%	10%	10%	10%	10%
	Storage Area	233SF	465SF	730SF	1,150SF	575SF
EXERCISE MODULE	Aerobic Exercise	1,200SF	1,650SF	2,800SF	4,500SF	2,250SF
	Non-Structured Exercise	1,000SF	1,250SF	1,750SF	2,500SF	1,250SF
	Subtotal Exercise	**2,200SF**	**2,900SF**	**4,550SF**	**7,000SF**	**3,500SF**
	Storage Allocation	10%	10%	10%	10%	10%
	Storage Area	220SF	290SF	455SF	700SF	350SF
SAUNA, LOCKERS SHOWERS, TOILET		2,400SF	3,800SF	5,850SF	8,800SF	3,000SF
STRUCTURED ACTIVITY	Racquetball Courts	850SF	850SF	850SF	1,700SF	850SF
	Other Struc. Activities	1,150SF	1,150SF	2,150SF	2,300SF	1,150SF
	Subtotal Struct. Act.	**2,000SF**	**2,000SF**	**3,000SF**	**4,000SF**	**2,000SF**
	Support for Other Struct.	10%	10%	10%	10%	10%
	Storage Area	115SF	115SF	215SF	230SF	115SF
GYM MODULE	BB Courts (Gym)	10,200SF	17,400SF	24,600SF	31,800SF	8,400SF
	Subtotal Gym	**10,200SF**	**17,400SF**	**24,600SF**	**31,800SF**	**8,400SF**
	Courts	1 court/s	2 court/s	3 court/s	4 court/s	1 court/s
	Support Allocation	10%	10%	10%	10%	10%
	Support (Tlt. & Stor.)	1,020SF	1,740SF	2,460SF	3,180SF	840SF
INDOOR TRACK		1,500SF	2,100SF	2,650SF	3,200SF	0SF
TOTAL NET OF MODULES		22,213	35,455	51,810	71,560	24,530
MISCELLANEOUS 25%		5,553	8,864	12,953	17,890	6,133
TOTAL GROSS AREA		27,766	44,318	64,763	89,450	30,663
NOMINAL GROSS AREA IN METRIC		2,580	4,120	6,020	8,310	2,850
ACTUAL SF BASED ON METRIC		27,771	44,347	64,799	89,448	30,677

Indoor Track is calculated at 50% of actual area in accordance with Army criteria.

C. Allocation of Facilities - Programming

Method of Allocation
Physical Fitness Facilities are allocated on the basis of Authorized Population (AP). Authorized population is counted as follows:

100%	of Active Duty personnel (AD)
25%	of AD Dependents
10%	of Civilians (in CONUS) if they are 60% of the total workforce
100%	of Civilians (OCONUS) regardless of percentage of workforce

New Construction
If no PFF exists on post, the procedure for allocating facility size is to calculate AP and reference the Authorized PFF Space Allowance Table on Page 5. Recommendations are presented in Section III of this manual to establish criteria for designing, constructing and equipping a new facility.

Existing Facilities
If there is an existing PFF on base, the procedure for assessment is:

- Calculate total AP
- Determine the Authorized PFF Space Allowance (see below)
- Measure PFF from outside wall to outside wall (gross square feet)
- Inventory and measure interior spaces (net square feet)
- Compare actual net and gross areas to Authorized PFF Allowances
- Identify deficits
- Identify surplus
- Analyze the facility for conformity to minimum ISR quality standards
- Record inadequacies or inefficiencies (surplus areas)

Since facilities are allocated solely on the basis of authorized population, it is important to accurately calculate the total authorized population. Army guidelines provide for only 25% of dependents to be counted in the AP. DoD statistics report that Fifty-percent of active duty personnel are married with an average of 2.83 dependents. Failure to accurately count the total Authorized Population may result in a facility that is undersized. Some of the consequences of an under-programmed PFF will be overcrowding and shortened life-span of building resources and equipment

Assumption
A chart illustrating a prototypical demographic breakdown of an Authorized Population of 1,000 persons is shown on the next page. Studies to test module sizes assume the peak user group for this prototype is AD personnel that makes up 74% of the total AP. The current DoD demographic profile for activity duty personnel in the DA is 85% Men and 15% Women. The DoD projects that within ten years the demographic split will be 80% Men and 20% Women. An overall male/female demographic for a total installation with an AD split of 80/20 Men/Women is estimated to be 60% Men and 40% Women.

	Estimated Authorized Population			1000	total
	Active Duty			**739.0**	**74%**
A	Married			369.5	
B	Unmarried			369.5	
C	Ratio of Dependents/Married (based on DOD statistics)	2.83 x	369.5	1045.7	
D	**Actual Base Population**			**1784.7**	
E	Married	100% x	A	369.5	
F	Unmarried	100% x	B	369.5	
G	Dependents	25% x	C	261.4	
	Total Authorized Users			**1000.4**	

10-Year Projected AD Breakdown = 80% Men, 20% Women

	Demographic Profile of Adult Population			
H	100% of AD Unmarried Men	80% x	B	295.6
I	100% of AD Unmarried Women	20% x	B	73.9
J	100% of AD Married Men	80% x	A	295.6
K	100% of AD Married Women	20% x	A	73.9
L	Female Spouses	100% x	J	295.6
M	Male Spouses	100% x	K	73.9
	Adult Population			**1108.5**

Projected Males on Base	**60%**	H+J+M	**665.1**
Projected Females on Base	**40%**	I+K+L	**443.4**
			1108.5

The two charts above illustrate the demographic profile of a CONUS installation with a civilian workforce of less than 60%. This installation qualifies for an X-Small PFF. The AP of 1,000 is comprised of 50% unmarried AD and 50% married AD with 2.83 dependents. This emulates the 2001 DoD statistic for the DA overall. The chart demonstrates that a PFF designed to accommodate an AP of 1,000 may have an actual installation population of 1,784.

The total Dependents (G) are assumed to be spouses and children. Children are expected to visit the PFF during off-peak times. The peak user group, creating demand in early morning and after-work hours, is expected to be adults. The lower chart illustrates that the actual adult population is 1,108 with a projected demographic of 60% Male and 40% Female.

It is unlikely that all 1,108 adults will visit the PFF at peak times. Some AD will be on-duty and spouses may be at home with children. For purpose of this study, the peak user group for all facilities is assumed to be 74% of the AP which equates to almost 100% of the AD personnel. The demographic profile of 80/20 Men/Women is used, even though 60/40 represents the overall base demographic. Depending on the MACOM and installation mission, the AD demographic may change, affecting participation statistics and utilization. Adjustments should be made to PFF Space allowances if the Male/Female population shifts more than 10% in either direction. See Section IV - Appendix (Page 41) for guidance in making adjustments.

Programming

Programming a Physical Fitness Facility (PFF) requires several steps to accommodate the Army's goals to provide adequate PFF facilities at every installation.

1. Determine if there are any PFF(s) existing on the installation already. If a PFF(s) already exists on the installation, determine whether the existing PFF(s) will be demolished or converted to some other use as part of this project, or shortly after the new facility is constructed, such that this new facility will be the only PFF on the installation. If no PFF exists, or the existing one will be removed from the inventory once the new one is built, use the gross areas provided in the PFF Space Allowance Table on Page 5 which is based on the authorized population of the installation.

2. If there are PFF facilities that will remain after the new facility has been constructed, determine if a Quantity Worksheet has been completed for the installation, which shows the total gross area of the facility as well as the net areas of all the functional modules.

    a. If the Quantity Worksheet has been completed, use the results from the worksheet to program the new facility. If the result indicates that you must build more than authorized in order to meet C1 status, please obtain MACOM approval as required. Also, evaluate the space in your existing PFF(s) to determine if the space could be utilized more efficiently, or if it would be wise to remove some of the facilities from your inventory. Utilize the Quality Worksheets from the ISR to help determine if a facility should be removed or renovated.

    b. If the Quantity Worksheet has not been completed, please complete the worksheet and follow the procedure above. If a Quantity Worksheet cannot be completed before programming the new facility, use the Standard Criteria to determine the allowed area for the authorized population of the installation. Subtract from that number the total gross building area of any PFF that will remain. The result is the amount that may be programmed for a new PFF. Realize that without the Quantity Worksheet, this new building may not meet the requirements for C1, and another construction or renovation project may be required in the out years.

3. In the overall gross areas for PFF, an allowance has been made for mechanical and electrical spaces. The "Miscellaneous Area" is the space to accommodate lobby, circulation, administration, wall thickness, and mechanical/electrical spaces. This area is calculated at 25% of the total net area of the functional modules. If there are mechanical and/or electrical requirements that result in larger mechanical and/or electrical rooms, this additional space must be added during the programming phase. FUNCTIONAL MODULES MAY NOT BE REDUCED IN AREA TO ACCOMMODATE MECHANICAL AND/OR ELECTRICAL REQUIREMENTS. Areas provided for each functional module are directly related to the requirements in the Installation Status Report (ISR). Reduction of these areas will result in a lower "C" rating for the installation, even after the construction of a brand new facility.

   e. Computation of Gross Areas. The gross area of facilities will be computed according to the definition in Chapter 5 of the TI. Unless otherwise noted, mechanical, electrical, and electronics equipment room space as required will be added to the gross areas shown in the following subparagraphs when determining a single gross area figure for a project DD Form 1391.

   f. Space Allowance Table (page 5) contains the space criteria for PFF. Generally these facilities include gear issue control, gymnasium, locker rooms, offices, exercise room(s), spectator area, storage, and toilet facilities. This type of facility is intended to be capable of supporting basic physical fitness skill training requirements. New PFF(s) will be designed in accordance with the approved Department of the Army (DA) Standard Design Packages, DEF 740-28-01 through DEF 740-28-06.

   For each authorized population increment of 5,000 personnel over 10,000, an additional PFF space of 2,850 m^2 (30,677 ft^2) gross area shall be added.

III Functional Relationships & Module Design Criteria

A. Component Descriptions

Lobby

A well-designed lobby serves to not only welcome visitors to the fitness facility, but also to motivate them. Functionally, the lobby provides a passageway to organize the building. Referred to as "public space" the lobby physically leads visitors from the exterior to the control point. The control desk should be adjacent to the entry for check-in/out and equipment issue. This facilitates monitoring and restricting access to the building and gives all visitors an arrival destination. From the control point, users can be easily directed to major activity areas and support spaces. Open views into the gymnasium, fitness facility and other activity modules instantly define building function and capture user attention. These views also enable supervision of activities from the control desk.

Features that make the lobby an inviting space include lounges to provide refuge for anyone waiting for a friend or for court time. However, recreation facility lounge areas should not resemble airport waiting areas with tandem seating. Instead, seating should be placed to invite socialization and relaxation with features that include an oversized television, comfortable seating and kiosk or message center. Small cafe-style tables and chairs may be provided if vending machines are available.

The shape of the lobby can either be classically geometric or a lineal concourse. The mall concept is newer and integrates retail thinking. A long passageway increases visual connection to fitness elements, thereby advertising activities. Lobby orientation is influenced by other factors including sun angles, tree coverage and pedestrian /vehicular circulation. Site context, massing and material selection also impact lobby design.

The aesthetic impact of the lobby relies on the placement and quality of finish materials. Durability and maintainability play a significant role in the selection of finishes for high-traffic areas. In general, warm colors and soft textures are most successful at creating an ambiance that invites users to linger in the transitory space. Resilient flooring materials are easy to maintain and stand up to high traffic. Terrazzo or porcelain tile floors add durability and quality. Suitable wall materials include burnished or split-face block, masonry or epoxy-painted concrete masonry units. Lobby lighting should include a combination of fluorescent and incandescent sources and, if possible, allow for skylights and clerestories. Various ceiling heights and drywall bulkheads help to define lobby functions.

More than any other space in the facility, the lobby furnishings and fixtures contribute to forming the user's impression of the building. Furniture, display cases, refuse containers, plants, graphics and signage should be carefully coordinated.

Gymnasium

Large volume gyms are often neglected by designers because function overwhelms creative possibilities. However, with careful planning, these "big-box" spaces will respond to a wide variety of program needs.

No other space can accommodate multiple activities as well as the gymnasium. Through the use of simple devices like divider curtains, concurrent basketball, volleyball, and even tennis is possible. Suspend the running track above the floor and runners or walkers can overlook floor activities. Such a large volume can incorporate interior views at many levels to look across to racquetball courts, high ceiling lobbies, or climbing walls. Views to the exterior offer visual variety from the inside and add interest in the facility to passersby. Windows have the added benefit of bringing in natural light in what traditionally has been an artificially lit and harsh environment. In short, careful planning of even the most utilitarian elements can make the gymnasium the visual and functional hub of the facility.

High performance materials, color, lighting, and ventilation are key elements that make gymnasiums attractive spaces. Ventilation systems should be designed with adequate air changes to maintain a suitable activity environment. Recommendations are provided in Section IV of this report.

Color and lighting impact overall design. White or light colors for walls and ceilings can be easily combined with accent colors. Light colors are also reflective, making a large-volume space easier to illuminate. Darker colors hide marks on the walls, but absorb light requiring greater levels of artificial illumination. Primary light sources for gymnasiums are high intensity discharge (HID). Selection and placement of light fixtures is crucial to achieving even but not harsh illumination. Downlighting alone may cause hot spots and glare on the playing surface. Indirect lighting alone may not provide sufficient light for competitive play. The preferred solution is a combination of indirect and direct lighting that illuminates the entire space with a minimum amount of glare. Recommendations for light level are provided in Section IV.

Suspending the running track helps to reduce the apparent volume of the gym module, as well as provide an opportunity to introduce accent colors and decorative elements via the railings and structural supports for the track. Accenting selected elements within the entire space can create a sense of energy and excitement, or in softer tones create a more relaxed atmosphere. Every element within the volume must be considered for its functional and visual impact on the whole.

Bleacher seating, basketball backstops, and divider curtains are other elements that provide opportunities for accenting and highlighting the space. Not only used for activity control, divider curtains form one of the strongest visual elements in the space. Careful consideration of mounting height and the proportion of solid versus open mesh material can prevent divider curtains from blocking views, lowering light levels, and constricting an otherwise light and open volume.

Flooring materials have the greatest impact on user satisfaction. Select high performance wood floors that utilize neoprene shock pads for impact absorption to reduce injuries while maintaining near perfect ball return characteristics. Maple floors are the industry standard, but a wide variety of appearance grades are possible. Lower grades may reduce cost for the same performance, but allow undesirable visual variation in the boards. Synthetic sports floors also offer competitive cost and performance characteristics while allowing the introduction of colors and durability. To repeat, careful planning and a reasonable understanding of how each element affects the visual quality of the space are key to creating a superior gymnasium. Technical guidelines for track and flooring elements are in Section IV.

Diagrams included in this section will illustrate recommended court layouts and striping. The layouts follow regulations from nationally recognized sports associations like the United States Volleyball Association (USAV) and the National Collegiate Athletics Association (NCAA). It is recommended that new courts should conform to competitive standards nationwide. The correct volume for the gymnasium module starts with the proper court dimensions, clear heights, and sideline allowances.

Regulation Information from the USA Volleyball Rule Book
USA Volleyball (USAV) is the national governing body for the sport of volleyball in the United States and is recognized by the Federation International de Volleyball (FIVB) and the United States Olympic Committee (USOC).

Ceiling Height
The playing space is free from any obstructions to a height of 7 m (23') from the playing surface.

Playing Court
The playing court measures 18 m x 9 m (59' x 29’6").

Center Line
The axis of the center line divides the court into two team courts measuring 9m x 9 m (29’6" x 29’6") each.

Lines
All lines on the court are 5 cm (2") wide.

Boundary Lines
Boundary lines: Two sidelines and two end lines mark the playing court. All boundary lines are drawn inside the dimensions of the playing court.

Attack Lines
Attack lines are drawn in each team court so that the edge of the attack line farthest from the center line is 3 m (9’10") from the axis of the center line. Extensions of the attack lines outside the court shall be marked with five 6" lines spaced 8" apart to a total length of 70" (for national competition).

Area Around the Court (Free Zone)
The free zone surrounds the court with a recommended minimum width of 2 m (6’6").

Net Height FIVB, USAV, California Beach Volleyball Association (CBVA), Women’s Professional Beach Volleyball Association WPVA

Net height for men, cooed mixed 6, & outdoor is 2.43 meters or 7’11-5/8".
Net height for women, boy’s 14-and-under & reversed mixed 6 is 2.24 meters or 7’4-1/8".
Net height for 12-and-under is 2.13m or 7’0".
Net height for girl’s 10-and-under is 1.98m or 6’6".

Information from the NCAA for Basketball
Court Dimensions and Markings
The ideal playing area is 50 feet wide by 94 feet long with at least 3 feet (preferably 10 feet) of open area outside the boundaries.

In addition to sidelines and end lines, markings include a center circle; a division line through the center circle from sideline to sideline, dividing the court into two equal parts; a free-throw lane (12 feet wide) and free-throw line (15 feet from the backboard) at each end of the court and a broken restraining line outside the court 6 feet from, and parallel to, the end lines. The center circle has a 6-foot radius. The area inside the circle may not be occupied by the eight nonjumpers until one of the two jumpers has tapped the ball.

The three-point arc, measured 19 feet 9 inches from the center of the basket, serves as the boundary line to let the referee know that three points shall be awarded for a successful field-goal attempt from beyond the line.

Fitness Module

Strength, cardiovascular and free-weight areas have moved from the dark recesses of gymnasium basements to become the most sought after and visible components of fitness facilities. High schools have incorporated fitness training into standard curriculum. Colleges now recognize that students come to their campus with a well-founded interest in fitness and wellness pursuits. Most young recruits will also be familiar with an array of workout equipment. Since military readiness is inextricably connected with fitness, this component should offer a stimulating environment that promotes an ongoing interest in physical proficiency.

Because of this enhanced purpose, army fitness modules should be designed for function and aesthetics. Many private sector facilities are used as much for socialization as fitness. Aesthetics in these private niche facilities is largely market-driven with interiors that sometimes resemble a nightspot. Community and collegiate recreation centers must appeal to a wider group satisfying more diverse expectations. These facilities generally benefit from a timeless design approach. Army fitness facilities should adopt a similar tactic. Newer thinking in fitness design integrates all equipment into one area, but creates separations in function by using half-walls, dropped ceilings, and changes in flooring materials. Cardiovascular and selectorized equipment are typically placed on antimicrobial, rubber-backed carpeting offering acoustical properties. Carpet tiles or carpet borders help to define pathways around the equipment. Free weight equipment must be directly visible and directly accessible to the reception (control) desk. Recommended free weight flooring is rubber interlocking tile or a synthetic flooring material. Dispersing cardiovascular equipment within lobbies or overlooks helps to bring movement throughout the facility. Cardiovascular “theaters” often include overhead mounted television monitors. In all, electrical considerations must be taken into account to power not just existing equipment, but future equipment as well.

Lighting is crucial to providing a stimulating fitness environment. Indirect lighting and a visual connection to indoor and outdoor vistas will have a positive influence on the users’ frame of mind. An exposed, painted ceiling can contribute a high-tech look, providing some other acoustical elements are incorporated to offset the hard-surface. Wall materials should be durable but not institutional. Mirrors, graphics, soft textures and wall-carpeting will help to soften the entire fitness environment. Recommendations for finishes are provided in Section IV of this report.

Regardless of the finishes and other design features, inadequate ventilation and temperature control will result in an undesirable workout experience. Mechanical systems should be capable of adjusting to different internal loads and occupancies at different times of the day. Recommendations for temperature and humidity levels are provided in Section IV of this report.

Exercise Module

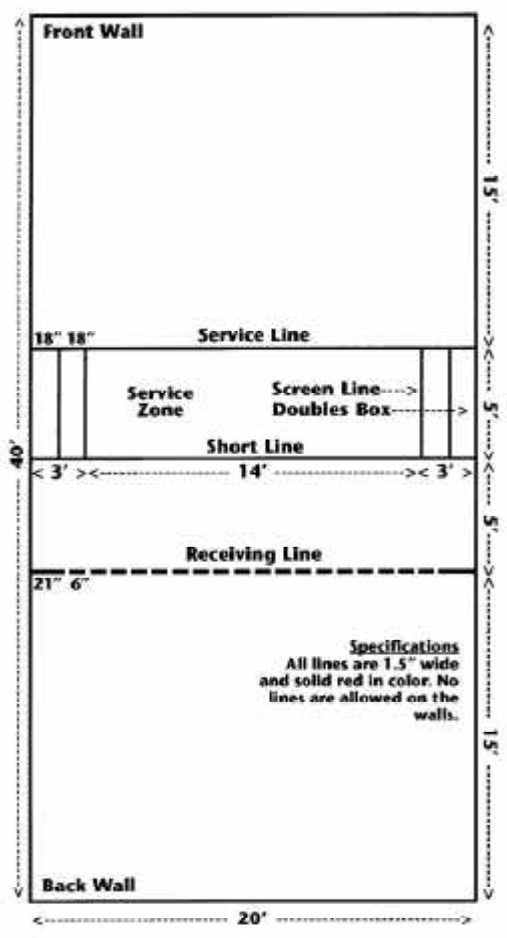
Over the past 30 years, group fitness activities have maintained steady growth and progression. Aerobic classes of the seventies were characterized by strained muscles and high impact movement in bare feet. Frequent injuries quickly taught instructors serious lessons about exercise safety. Since that time, improvements in flooring, footwear, equipment and instruction technique have helped to generate safer, low impact movements that prevent injury.

Today, the list of popular classroom activities continues to grow including conditioning, yoga, martial arts, "boxercise," dance, spinning, urban rebounding, etc. All of these activities provide aerobic or "cardio" conditioning. Some programs incorporate strength training by using hand-held weights, elastic bands and stability balls.

Fitness programs that support military readiness may include many of the above activities combined with individualized workouts in the fitness module. Providing adequate programming will be the greatest challenge for PFF facility operators. In addition, young recruits may have a desire for activities that imitate extreme sports. Flexibility in classroom design will be essential to accommodate a variety of programs. Equipment setup and tear down time will effect the rollover of the exercise modules. Some studios may need to be dedicated such as spinning. Although the stationary bikes can be moved to the side walls to accommodate other floor activities, the loss of class time could be substantial during peak hours.

The staff for each PFF should monitor the popularity of programs and equip the exercise modules accordingly. The desire to participate in group exercise will be influenced not only by trend, but also by the quality of the instructor. A skilled and enthusiastic instructor will quickly create demand. Hiring and retaining proficient instructors is key to filling group programs.

Each PFF is programmed to have two studios with adjacent storage. Design criteria for exercise modules is provided in Section IV and includes data for flooring, lighting and environmental conditions.

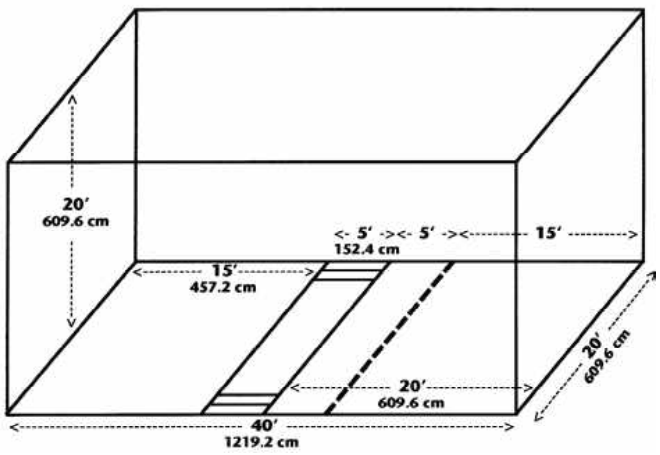


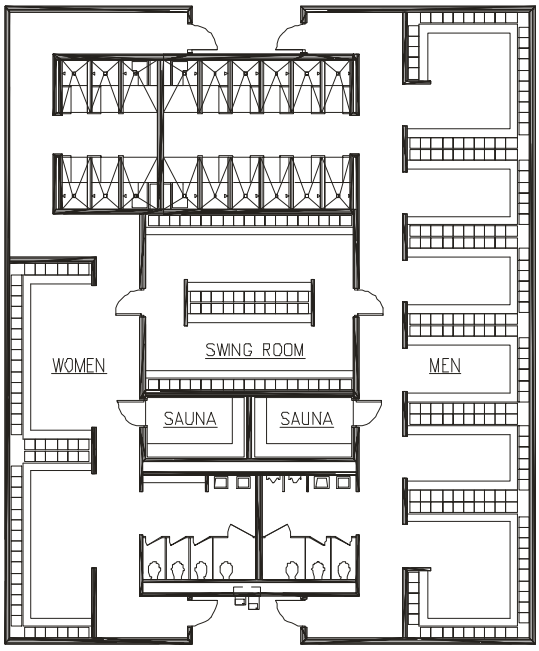
Structured Activity Areas

Structured activity areas have very specific design requirements. However, the orientation of these components is subjective. A minimum of one racquetball court is programmed for each PFF. An additional Structured Activity Area space is also programmed and will be allocated on a case by case basis to satisfy recreational demand. Additional racquetball courts can be provided with this allocation, or other elements that could include a spinning studio, climbing wall, squash court, etc.

Racquetball participation is on the decline in the United States decreasing from 8.2% in 1989 to 3.2% in 1999. These spaces are expensive to construct and are not easily adapted to other use. A careful review of the need for racquetball courts should be reviewed by each facility before constructing new or additional courts. That said, court play is exciting to watch. A highly competitive game will draw spectators who may be on the way to or from their own activities. Views into racquetball from the lobby or main corridor system add vitality to the building.

The United States Racquetball Association (USRA) and International Racquetball Federation (IRF) provide specification criteria for court design and construction. Courts built to USRA/IRF standards will be suitable for all types of play including international matches. Diagrams on this page are provided on the USRA website. Design criteria for racquetball courts is provided in Section IV of this report.





Sauna, Lockers, Showers, Toilet

Important locker room design elements include aesthetics, environment, layout and location. Every effort should be made to provide a direct connection between locker facilities and major activity spaces. Design options for consideration include family change rooms or satellite uni-sex change rooms for after-hour use. Convertible locker room space that is accessible from both male or female locker rooms will provide a "swing" space to increase locker room capacity for special events. An example of a locker room design incorporating swing space is shown in the left margin.

Other key objectives in locker room design include selecting eye catching colors, using maintenance-free materials and providing an adequate ventilation system. Every material used in the shower, toilet, locker and sauna area has color. Coordinating these color finishes, as well as other building materials, should be done in consultation with design professions. In general, multicolored schemes are more appealing than pallets that are limited to shades of gray or neutrals. Manufacturers have broadened color options over the last decade and simplified the specification process. Most tile manufacturers provide preset tile patterns in sheets. Standard patterns are cost effective and require minimal color selection. These floor patterns are an excellent method of adding design quality for very little money. Coordinating wall tile patterns, wall graphics, paint, toilet and shower partitions, and locker room flooring will tie these elements together and unify the entire locker room space.

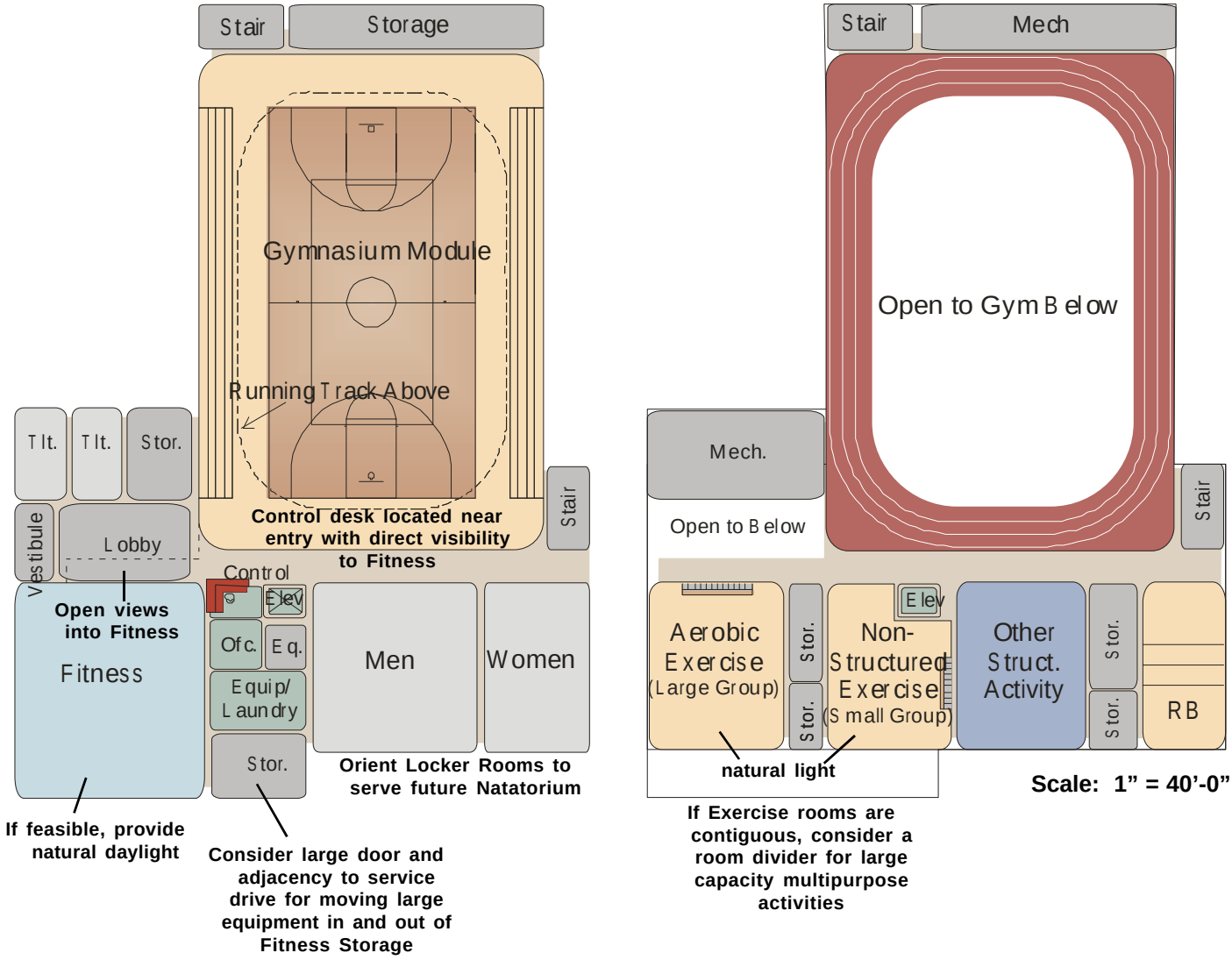
Concrete masonry unit (CMU) wall construction is recommended for locker room areas. Wall finishes in wet areas should be nonporous materials such as glazed ceramic wall tile, glazed CMU, or unglazed porcelain tile. Wall tile can be carried throughout non-wet areas or CMU can be filled and painted with an epoxy coating. Slip resistant materials or unglazed porcelain tile should be used for floors in all wet areas. Epoxy grouts for floor tile should be darker to offset the discoloration that will come with time. Antimicrobial, pvc-backed carpet with welded seams is an ideal finish for locker areas. The carpet provides an acoustical element to help muffle the sound of metal locker doors.

Recommended ceiling materials include plaster ceilings in wet areas and a moisture-resistant suspended ceiling in locker room areas.

Maintenance of wet areas and locker rooms is the final, and most important, component in providing an appealing recreational experience. Even though most users may change and shower in a short period of time before departing, every user in the facility will take notice of neglected locker room areas. Instituting adequate procedures and daily inspection will go a long way to extending the life-span of finishes.

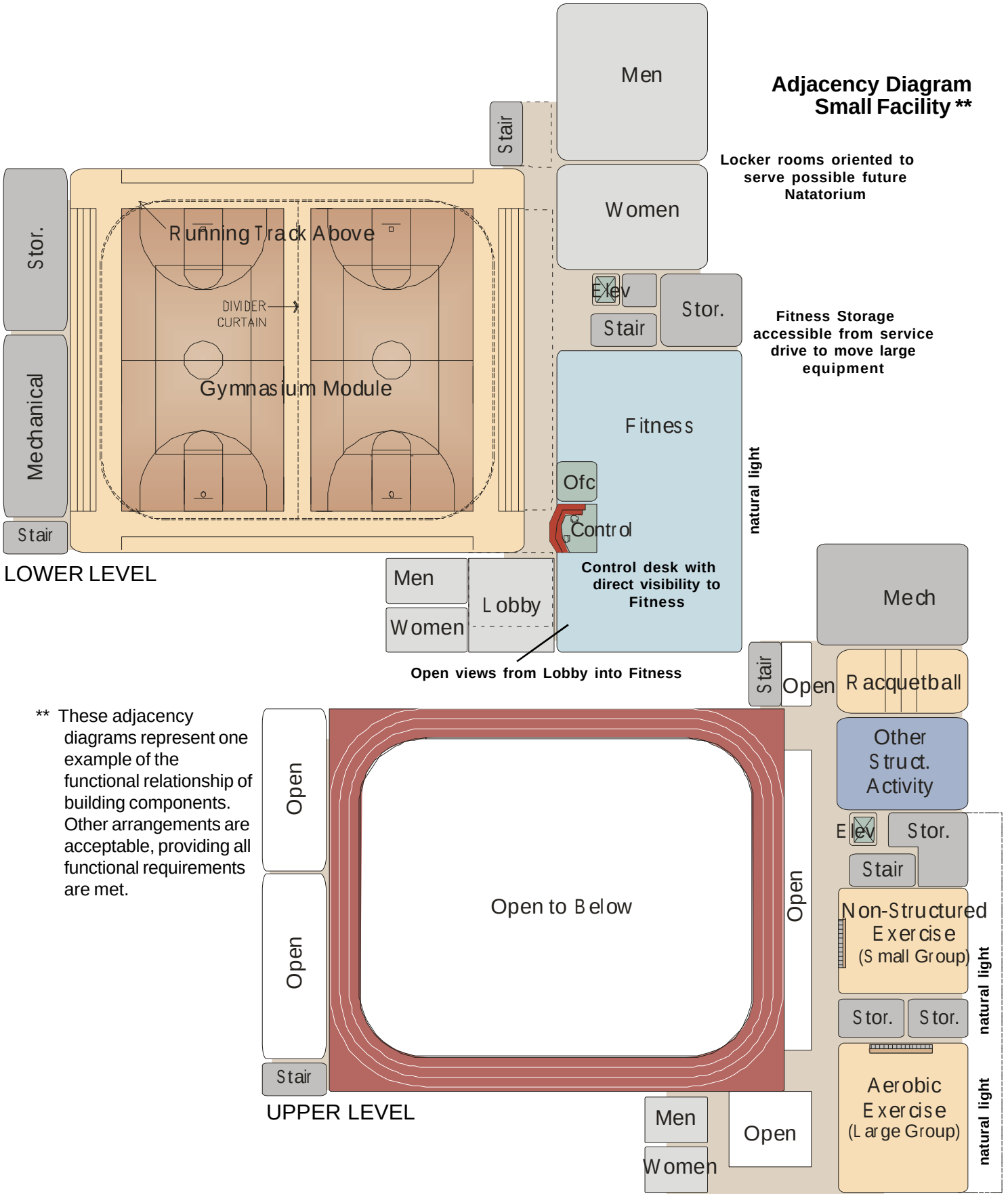
Specific recommendations for materials and finishes can be found in Section IV of this report.

Adjacency Diagram - X-Small Facility **



** These adjacency diagrams represent one example of the functional relationship of building components. Other arrangements are acceptable, providing all functional requirements are met.

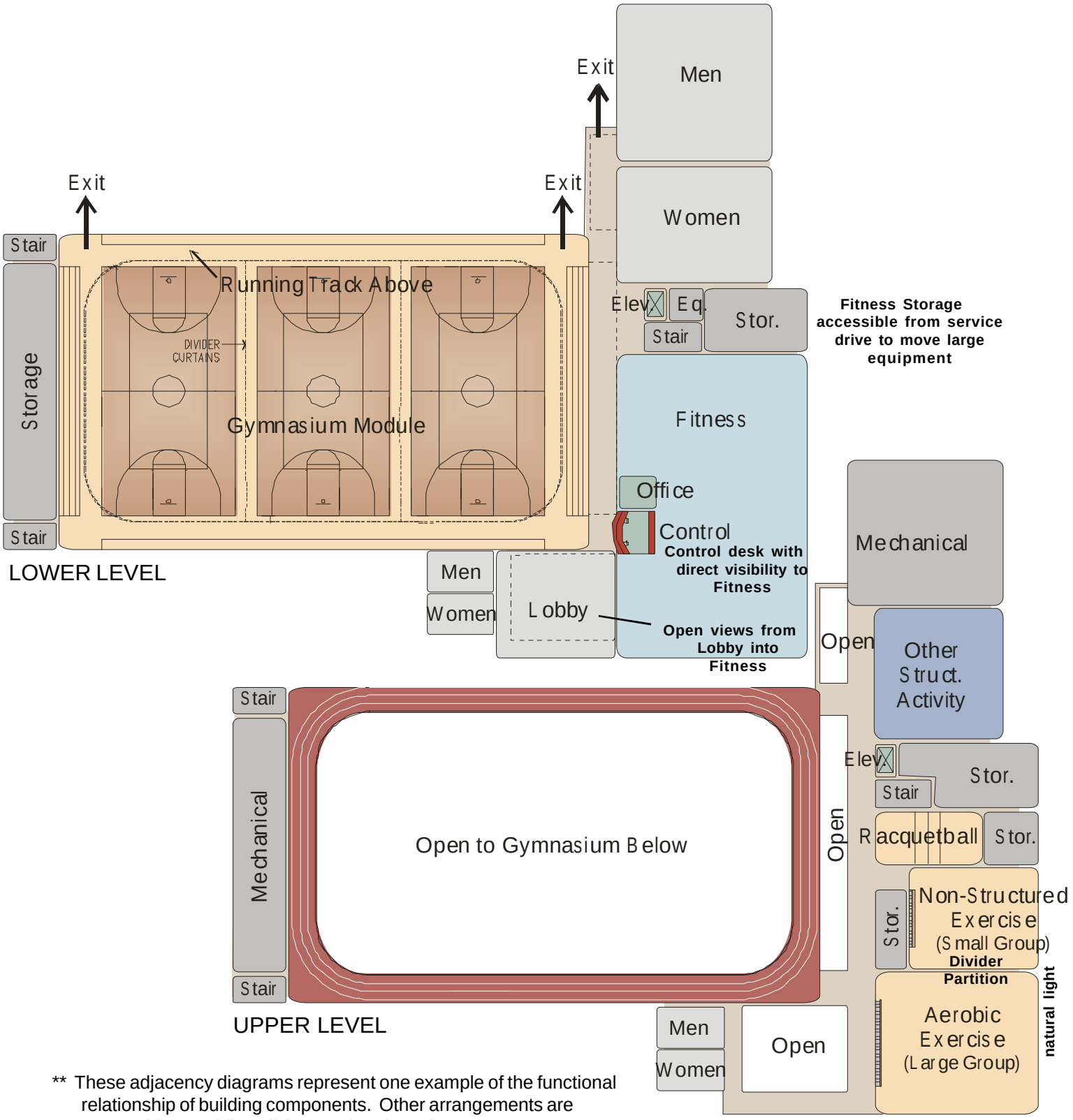
Adjacency Diagram
Small Facility **



** These adjacency diagrams represent one example of the functional relationship of building components. Other arrangements are acceptable, providing all functional requirements are met.

Scale: 1" = 40'-0"

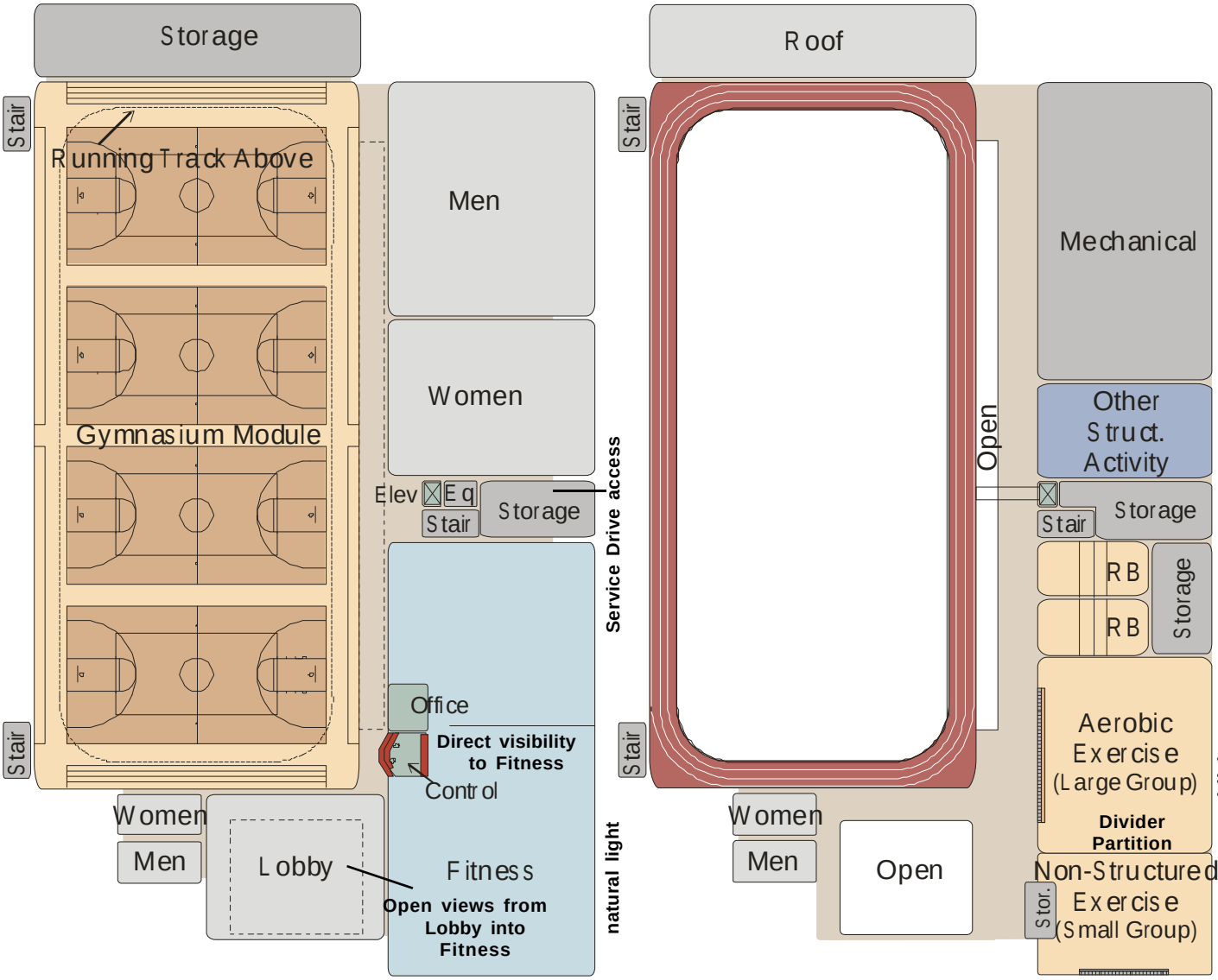
Adjacency Diagram - Medium Facility**



** These adjacency diagrams represent one example of the functional relationship of building components. Other arrangements are acceptable, providing all the functional requirements are met.

Scale: 1" = 50'-0"

Adjacency Diagram - Large Facility**



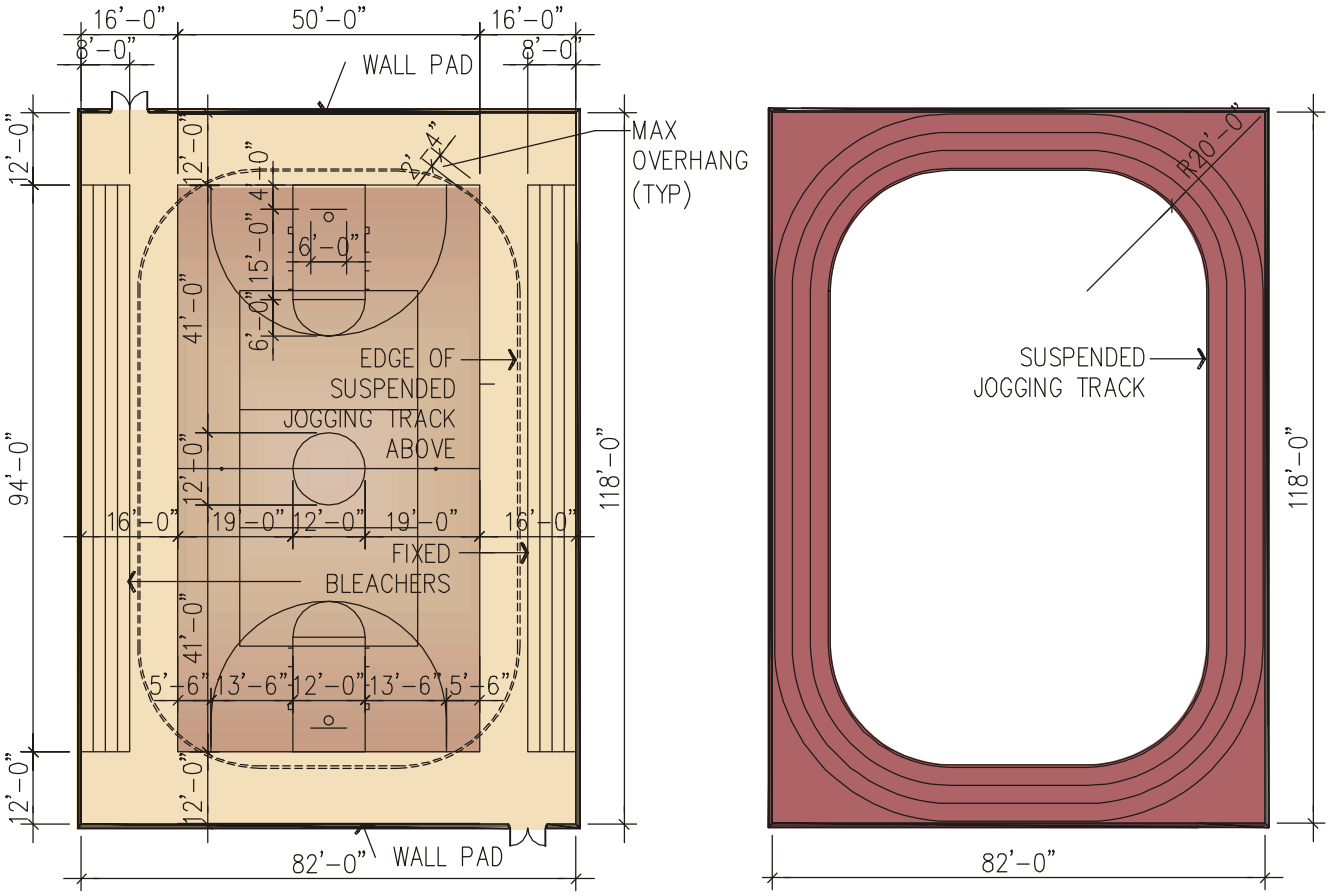
LOWER LEVEL

UPPER LEVEL

Scale: 1" = 60'-0"

** These adjacency diagrams represent one example of the functional relationship of building components. Other arrangements are acceptable, providing all the functional requirements are met.

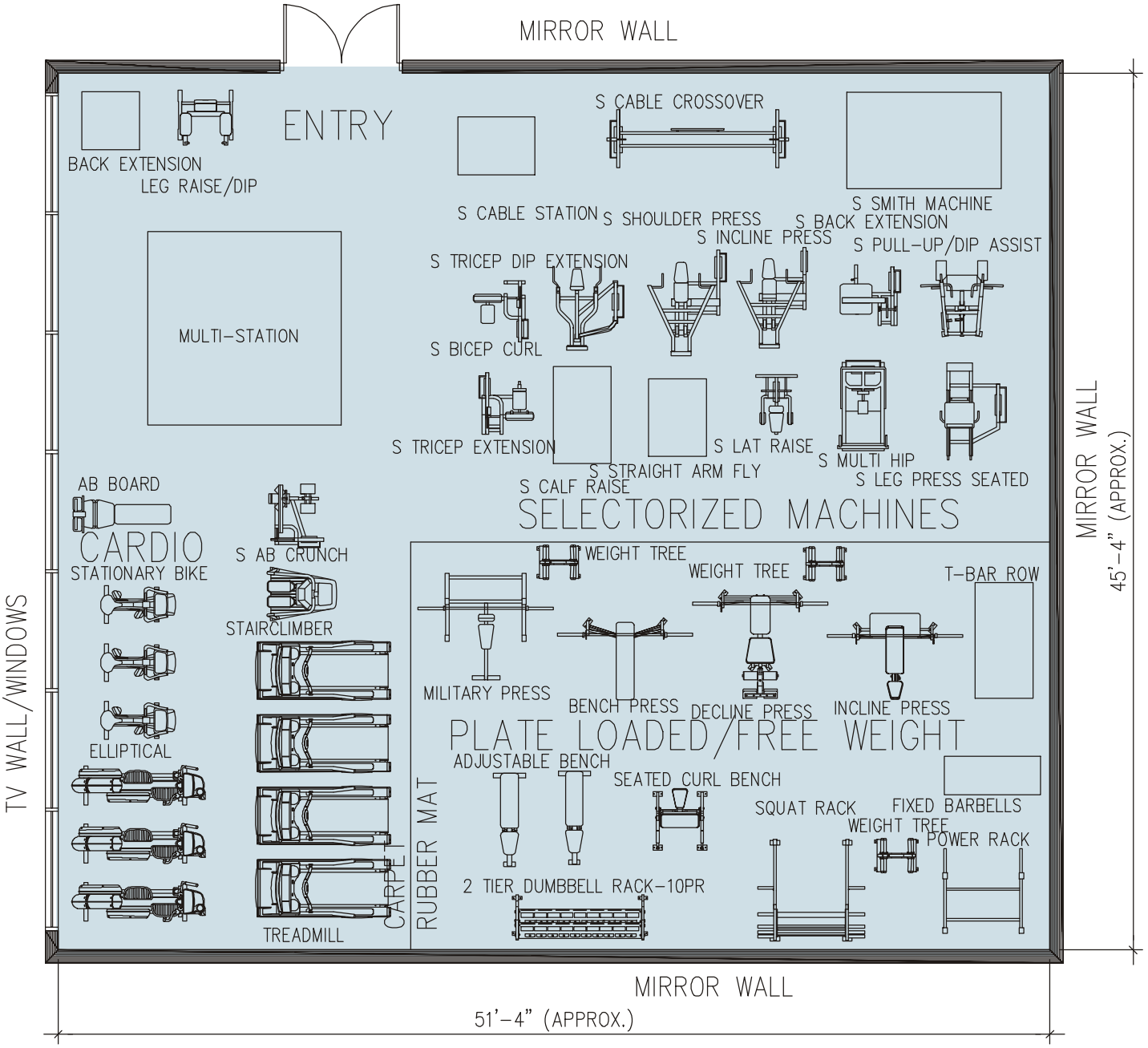
X-Small One-Court Gymnasium / Suspended Track



One-Court Gymnasium Module
Total Square Feet = 9,676
Track Total = 3,838 Square Feet

Scale: 1/32" = 1'-0"

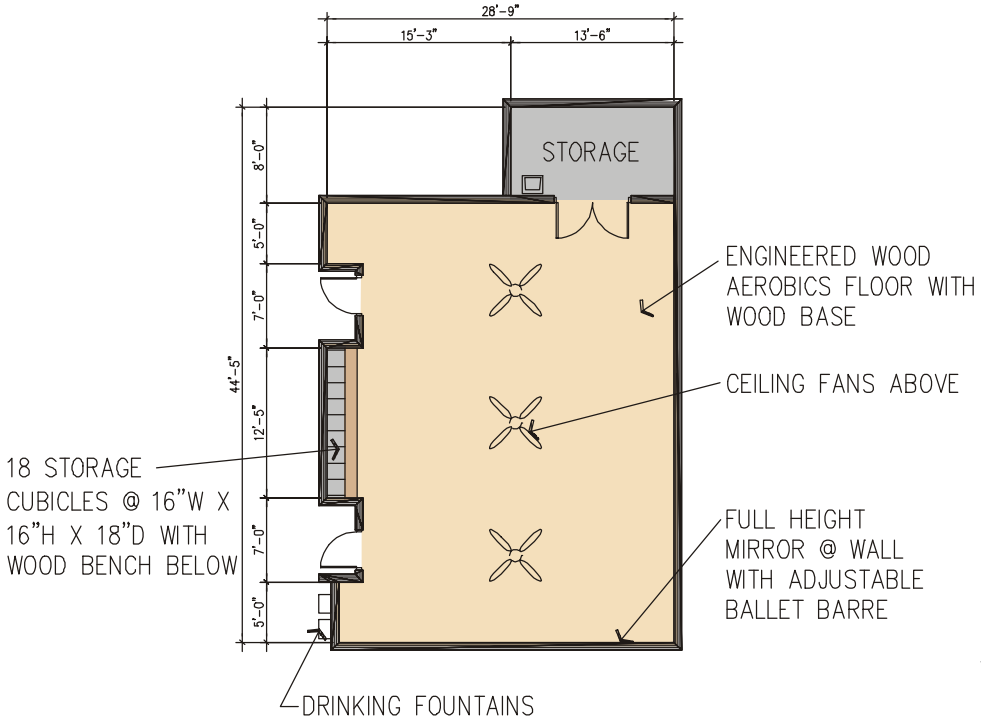
X-Small Fitness Module



Fitness Module
Total Square Feet = 2,325

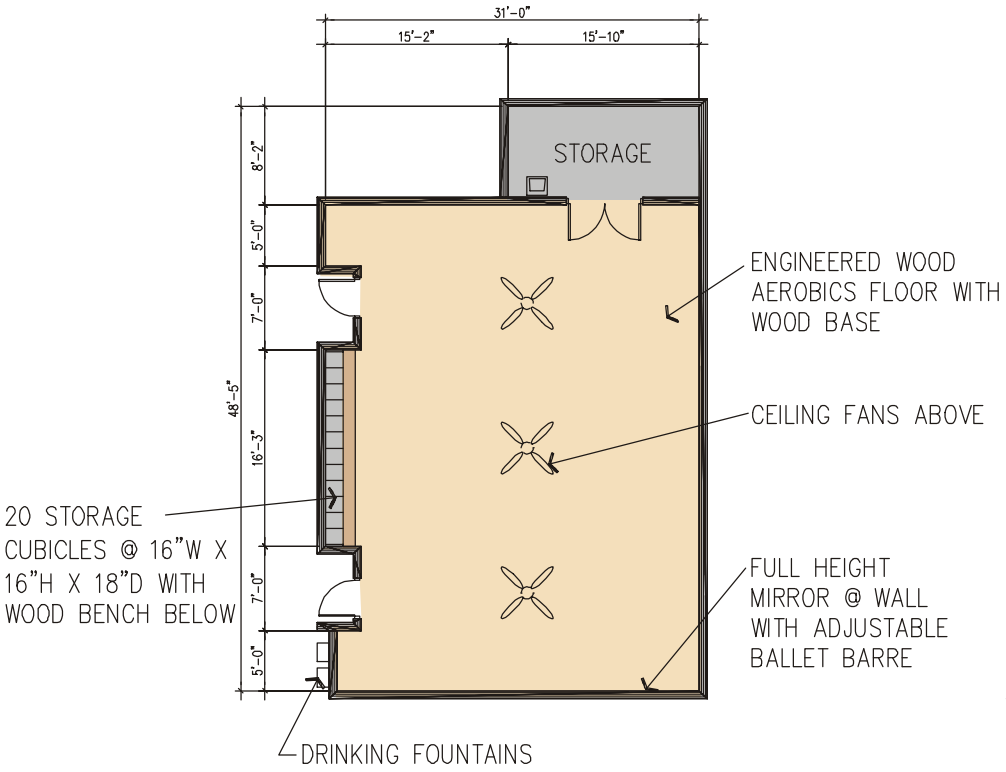
Scale: 1/8" = 1'-0"

X-Small Aerobic & Non-Structured Exercise Module
(Large & Small Group Exercise)



Small Group Exercise
Total Square Feet = 1,000
Storage Total = 100 Square Feet

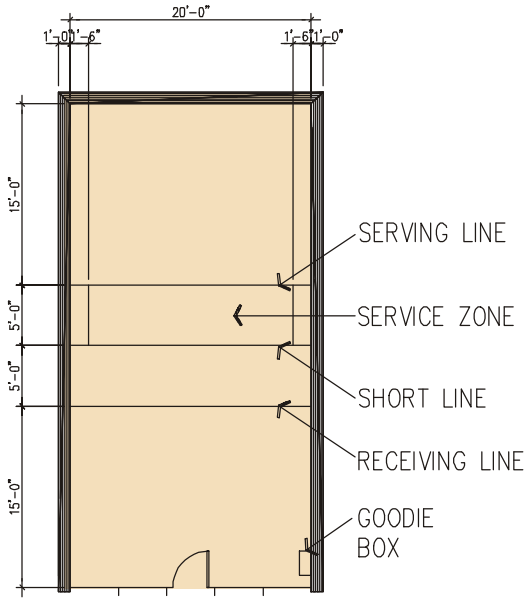
Scale: 1/16" = 1'-0"



Large Group Exercise
Total Square Feet = 1,200
Storage Total = 120 Square Feet

Scale: 1/16" = 1'-0"

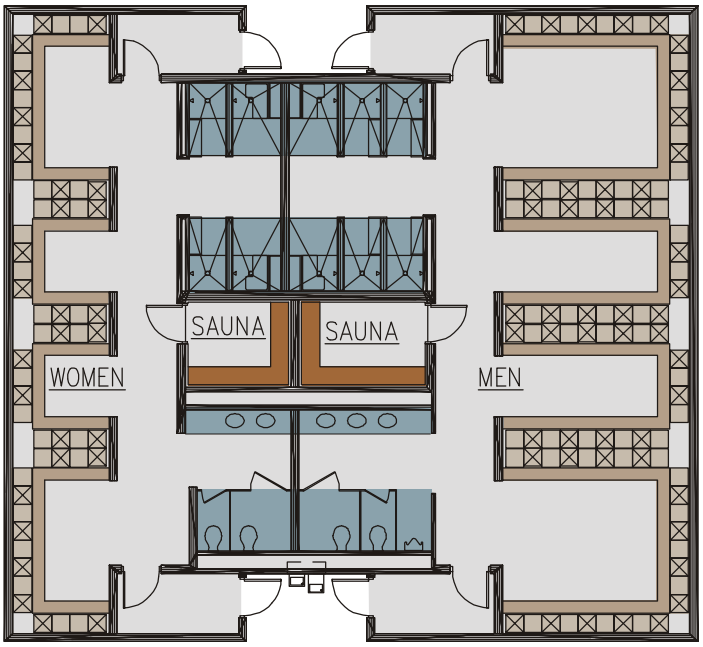
X-Small, Small and Medium - Structured Activity Module
(Racquetball Court)



Racquetball Court
Total Square Feet = 800

Scale: 1/16" = 1'-0"

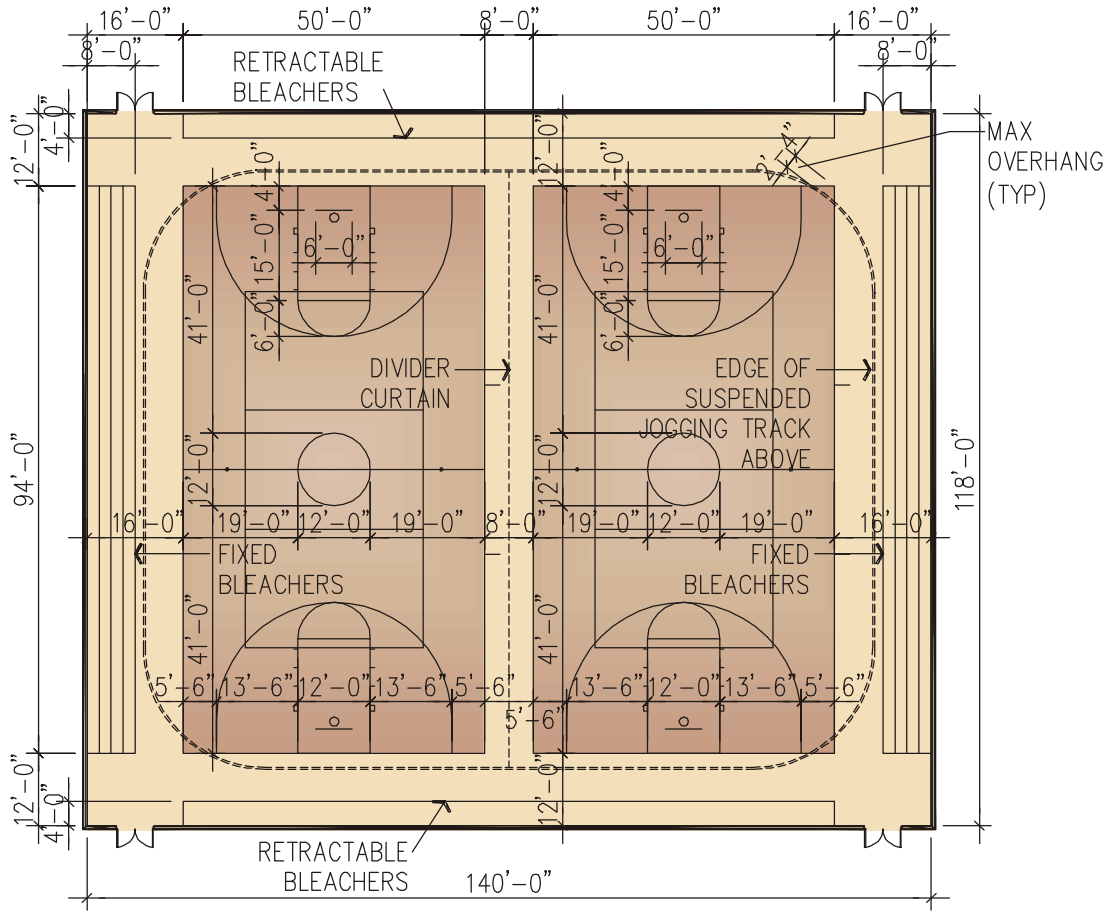
X-Small - Sauna, Lockers, Toilet Module



Sauna, Lockers, Toilet
Total Square Feet = 2,550 (288 total lockers)
Men - 144 Lockers - 48 full, 96 double tier
Women - 84 Lockers - 28 full, 56 double tier

Scale: 1/16” = 1’-0”

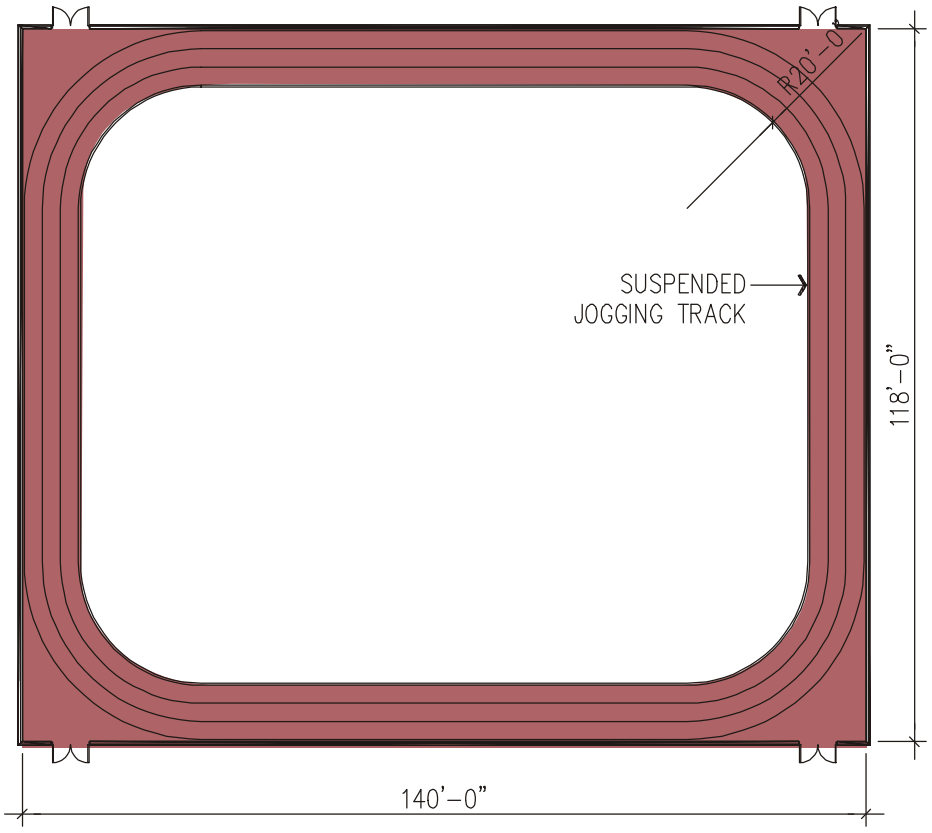
Small Two-Court Gymnasium



Two-Court Gymnasium Module
Total Square Feet = 16,520

Scale: 1/32" = 1'-0"

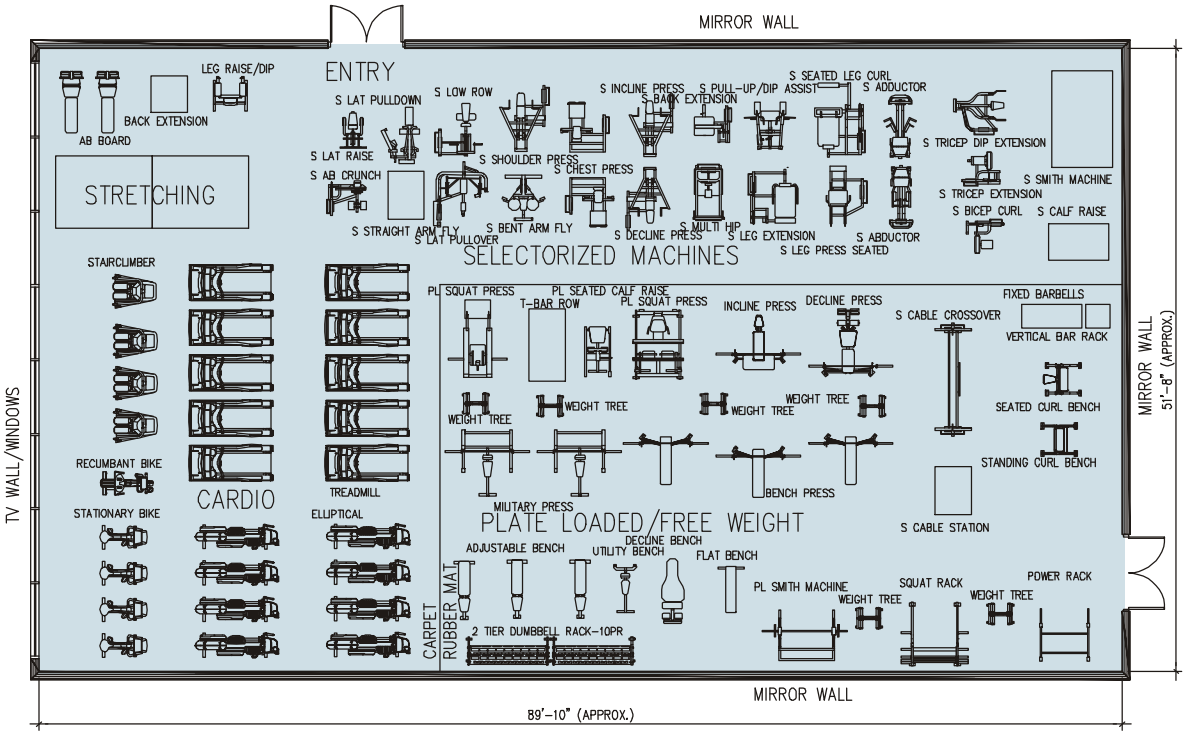
Small Two-Court Gymnasium Suspended Track



Two-Court Gymnasium Module Track
Track Total = 4,958 Square Feet

Scale: 1/32" = 1'-0"

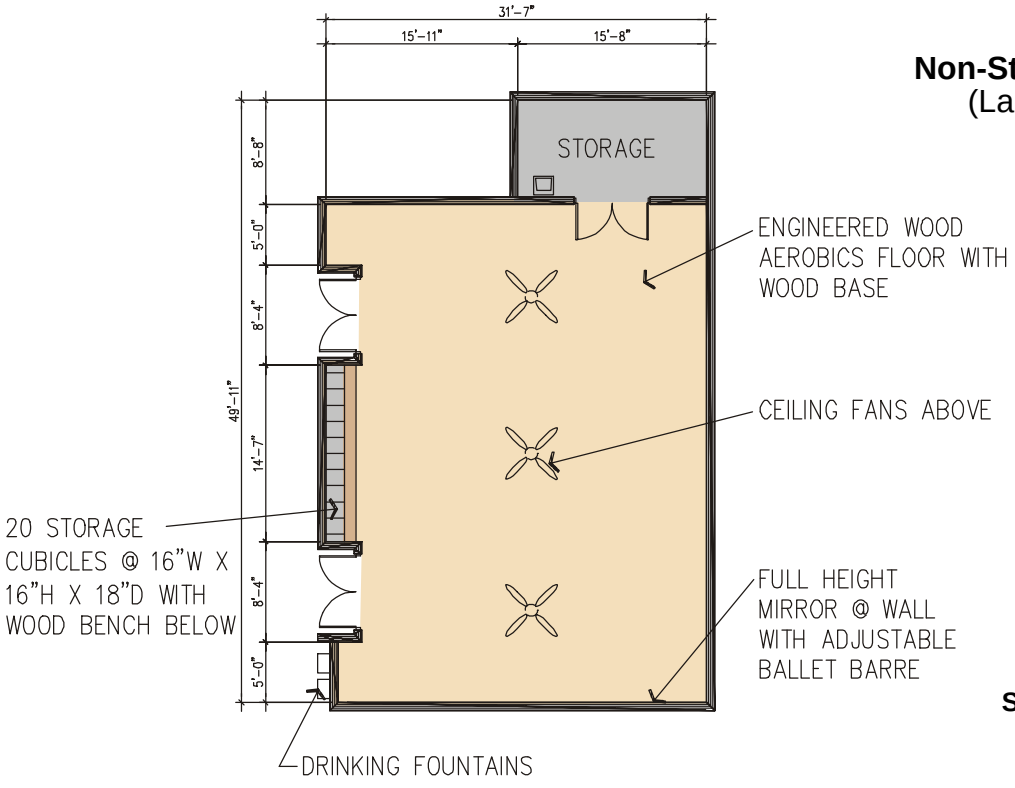
Small Fitness Module



Fitness Module
Total Square Feet = 4,645

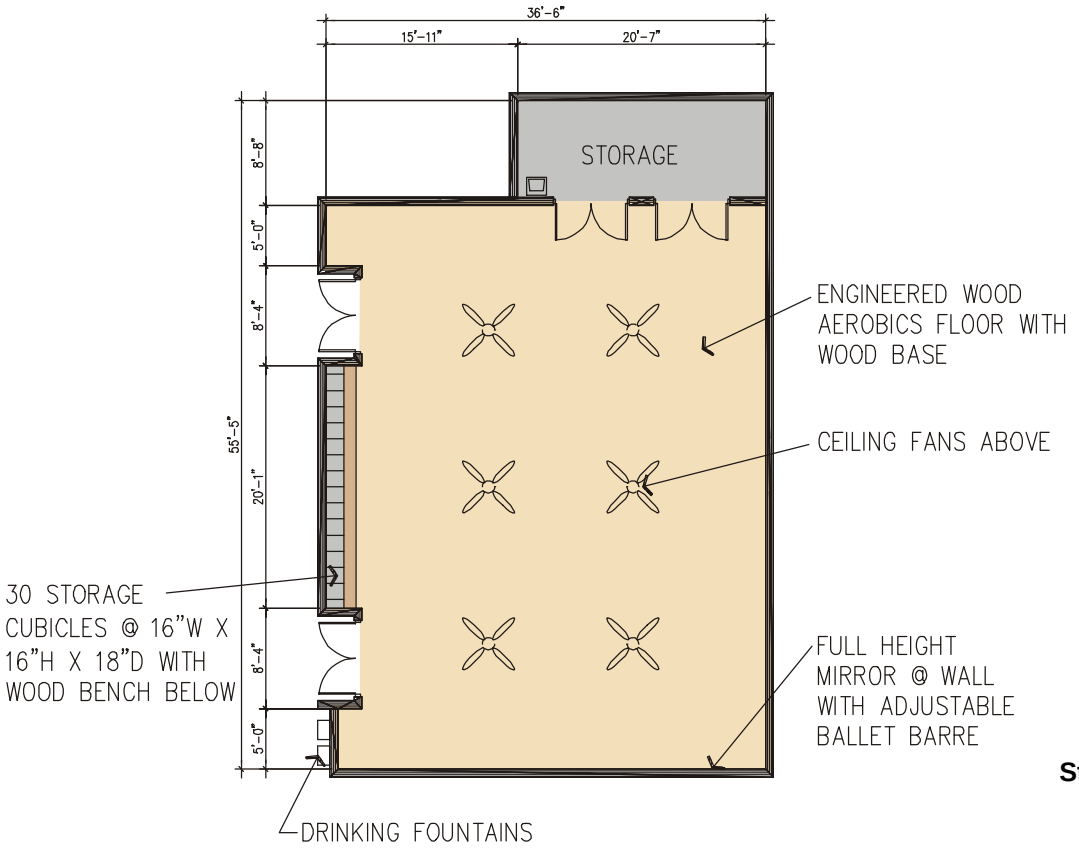
Scale: 1/16” = 1’-0”

Small Aerobic & Non-Structured Exercise Module
(Large & Small Group Exercise)



Small Group Exercise
Total Square Feet = 1,250
Storage Total = 125 Square Feet

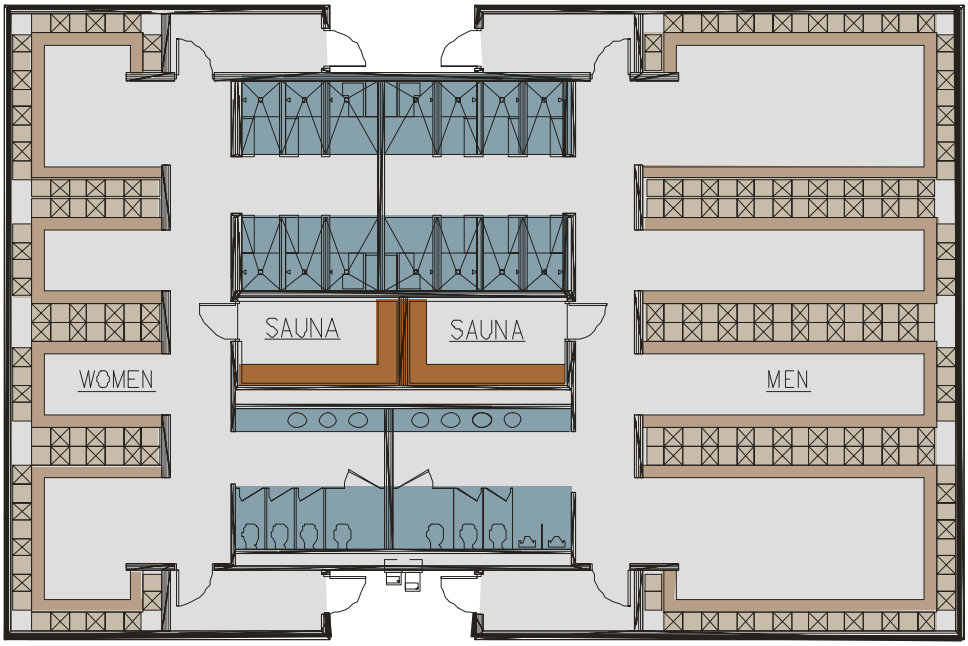
Scale: 1/16" = 1'-0"



Large Group Exercise
Total Square Feet = 1,650
Storage Total = 165 Square Feet

Scale: 1/16" = 1'-0"

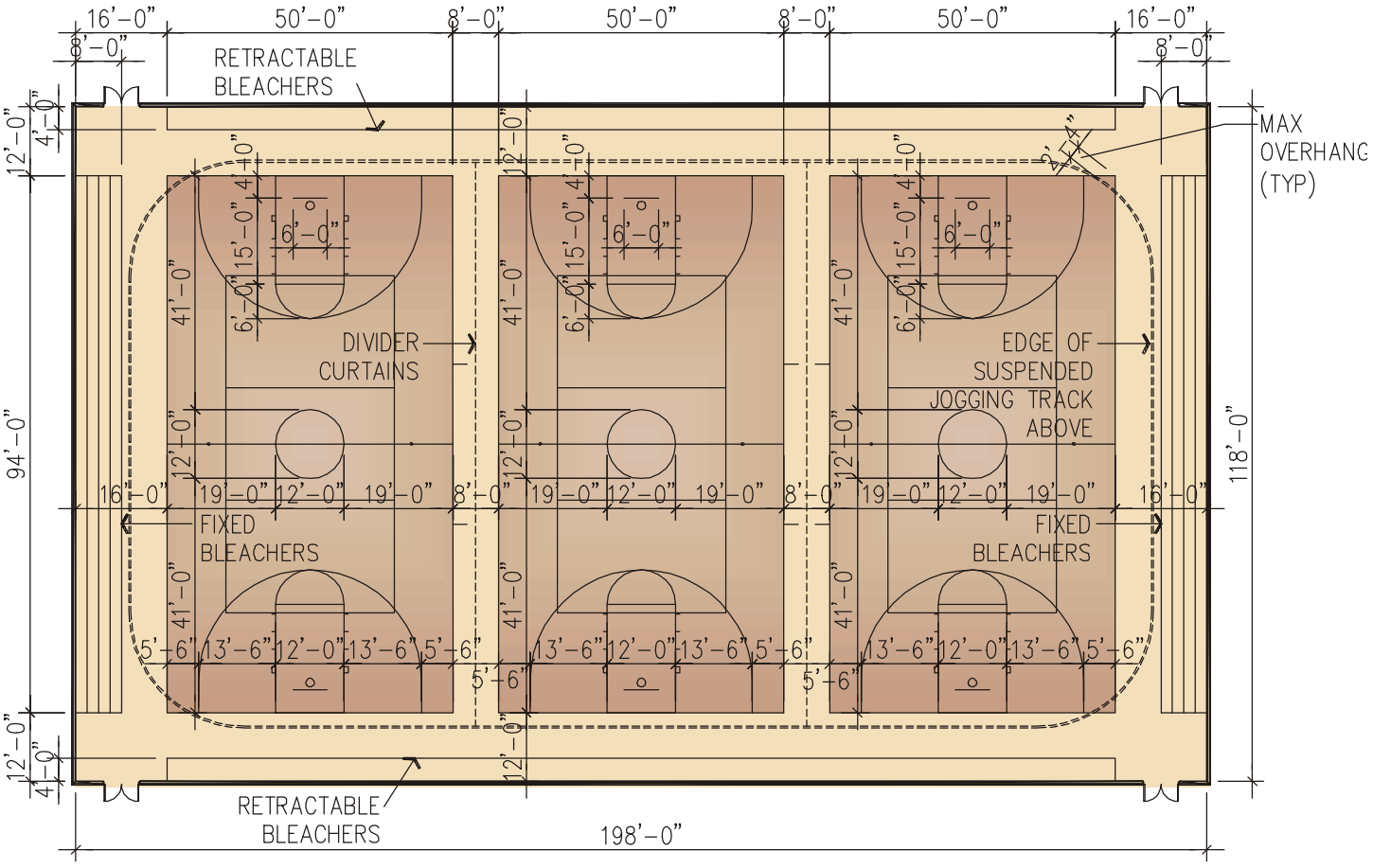
Small - Sauna, Lockers, Toilet Module



Sauna, Lockers, Toilet
Total Square Feet = 3,630 (354 total lockers)
Men - 231 Lockers - 77 full, 154 double-tier
Women - 123 Lockers - 41 full, 41 double tier

Scale: 1/16” = 1’-0”

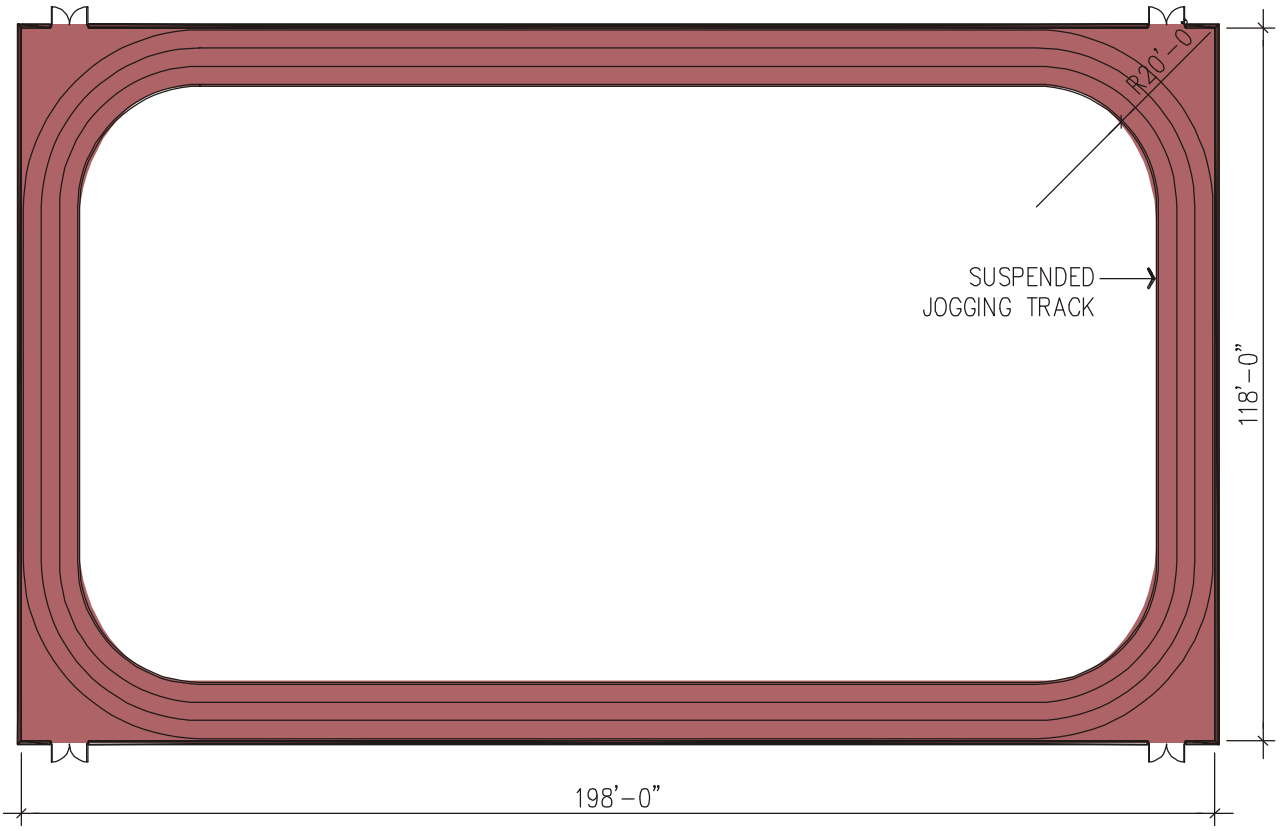
Medium Three-Court Gymnasium



Three-Court Gymnasium Module
Total Square Feet = 23,364

Scale: 1/32" = 1'-0"

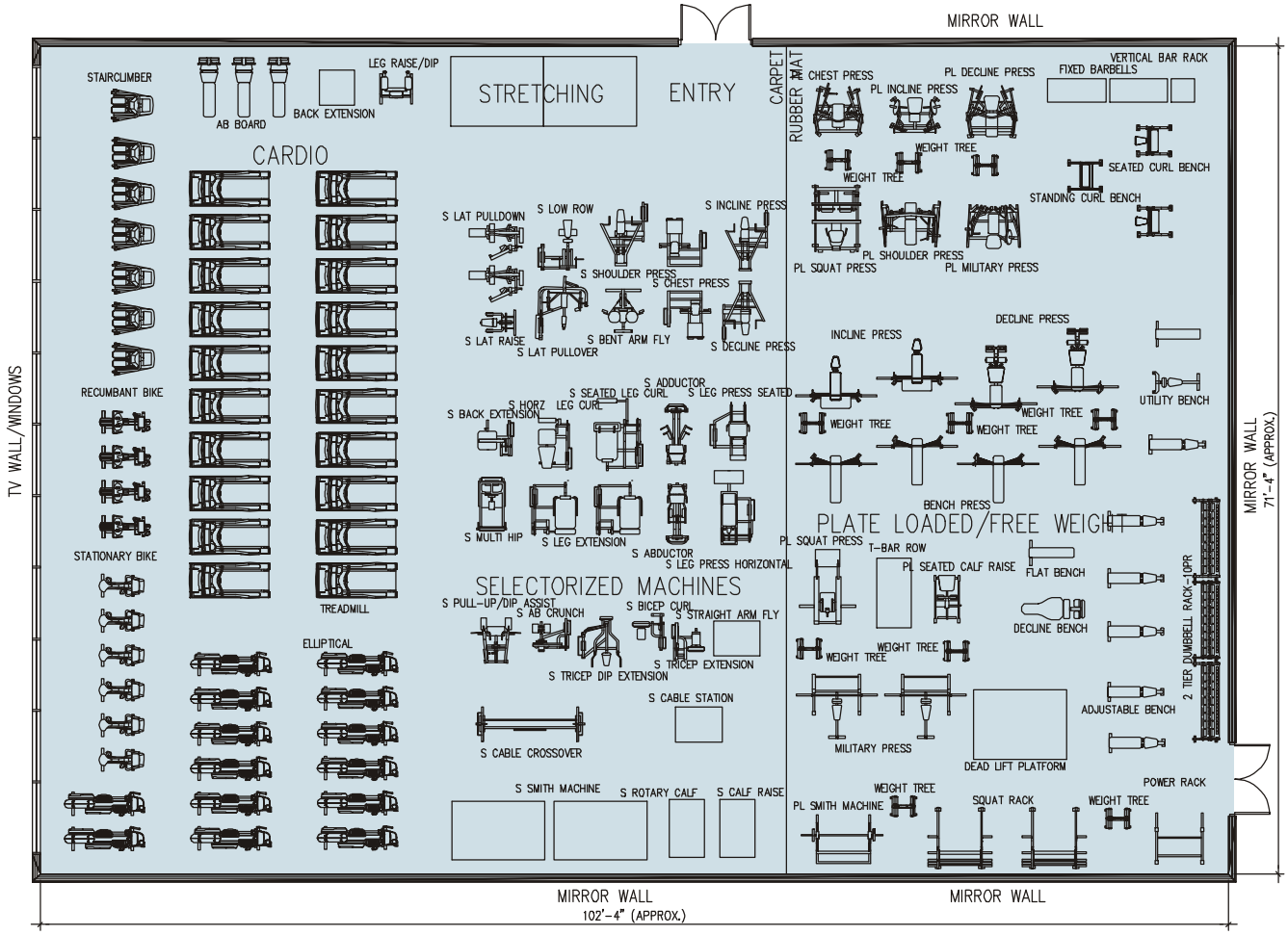
Medium Three-Court Gymnasium Suspended Track



Three-Court Gymnasium Module Track
Track Total = 6,079 Square Feet

Scale: 1/32" = 1'-0"

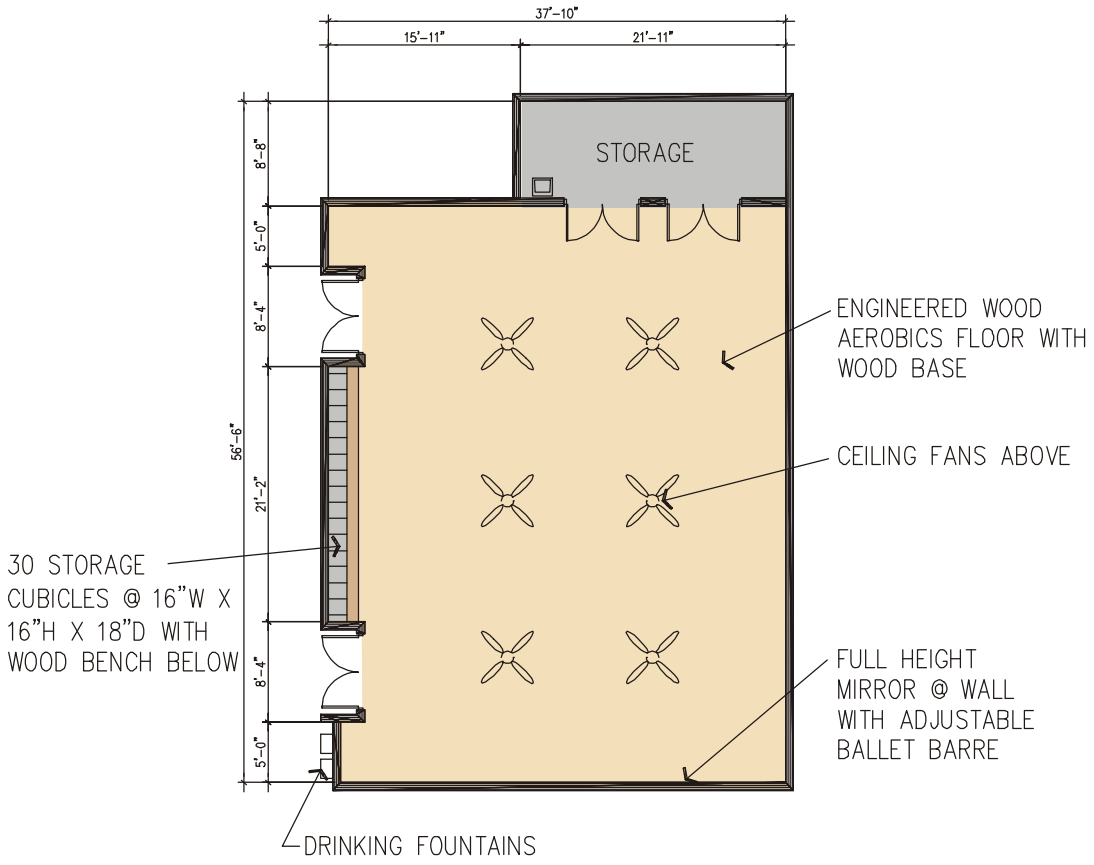
Medium Fitness Module



Fitness Module
Total Square Feet = 7,300

Scale: 1/16” = 1’-0”

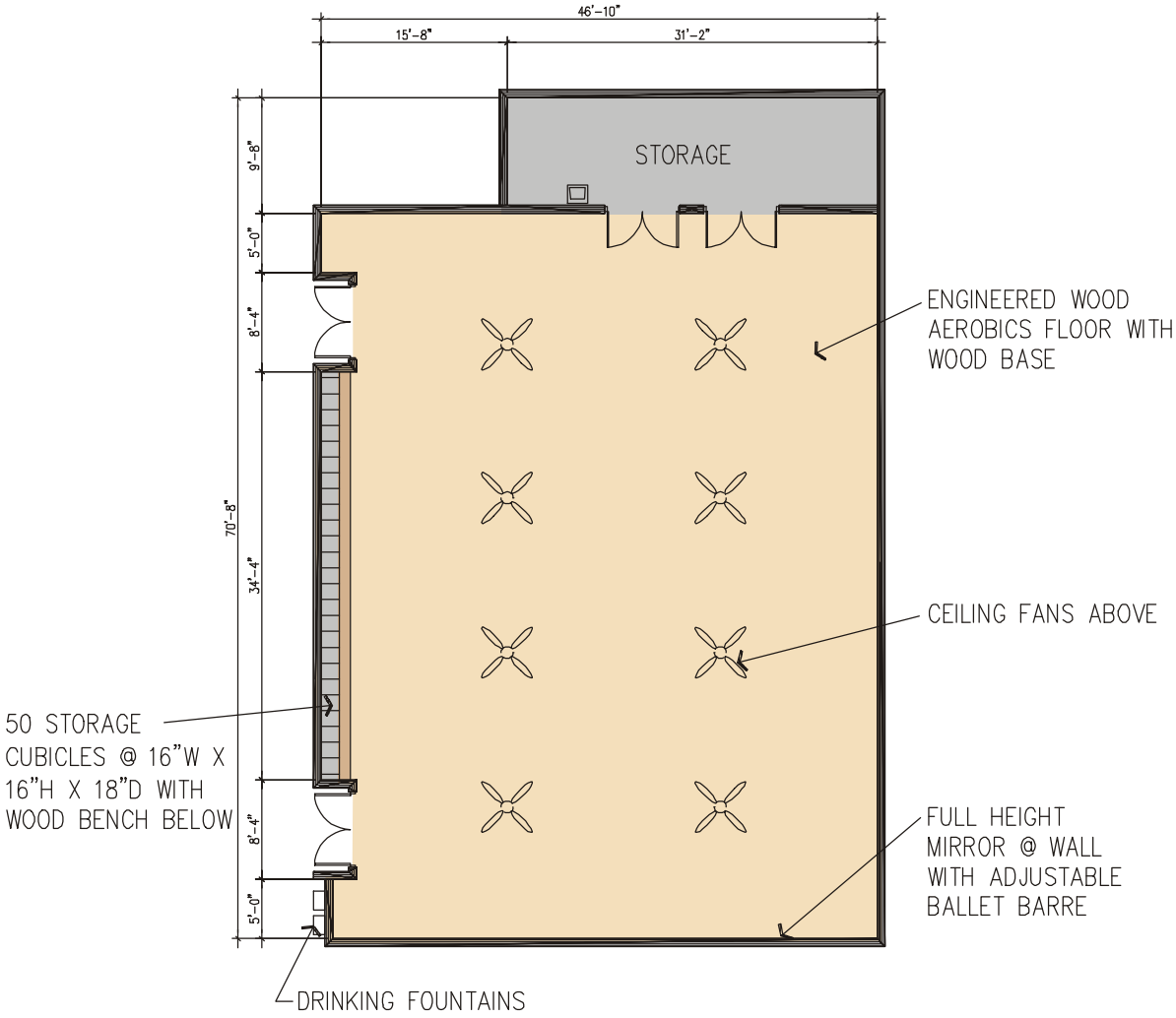
Medium Non-Structured Exercise Module
(Small Group Exercise)



Small Group Exercise
Total Square Feet = 1,750
Storage Total = 175 Square Feet

Scale: 1/16" = 1'-0"

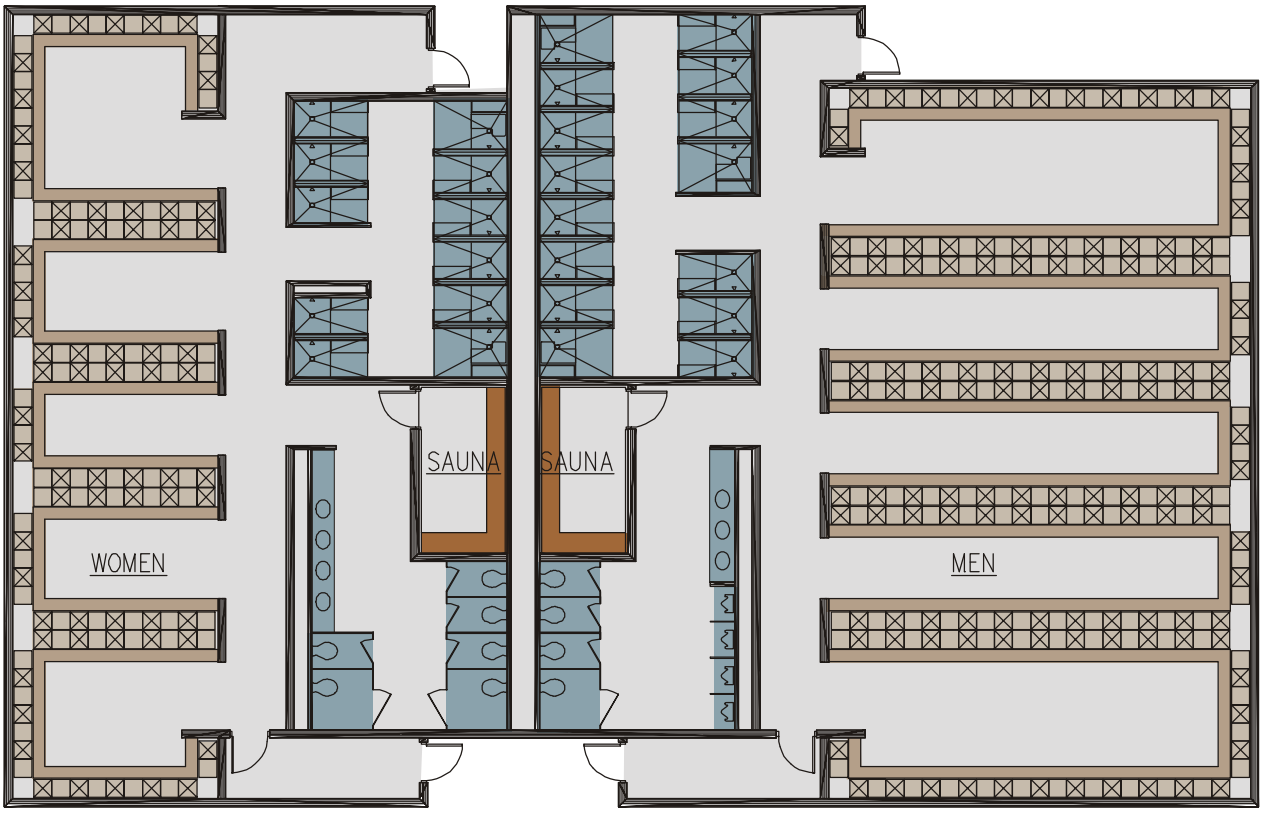
Medium Aerobic Exercise Module
(Large Group Exercise)



Large Group Exercise
Total Square Feet = 2,800
Storage Total = 280 Square Feet

Scale: 1/16" = 1'-0"

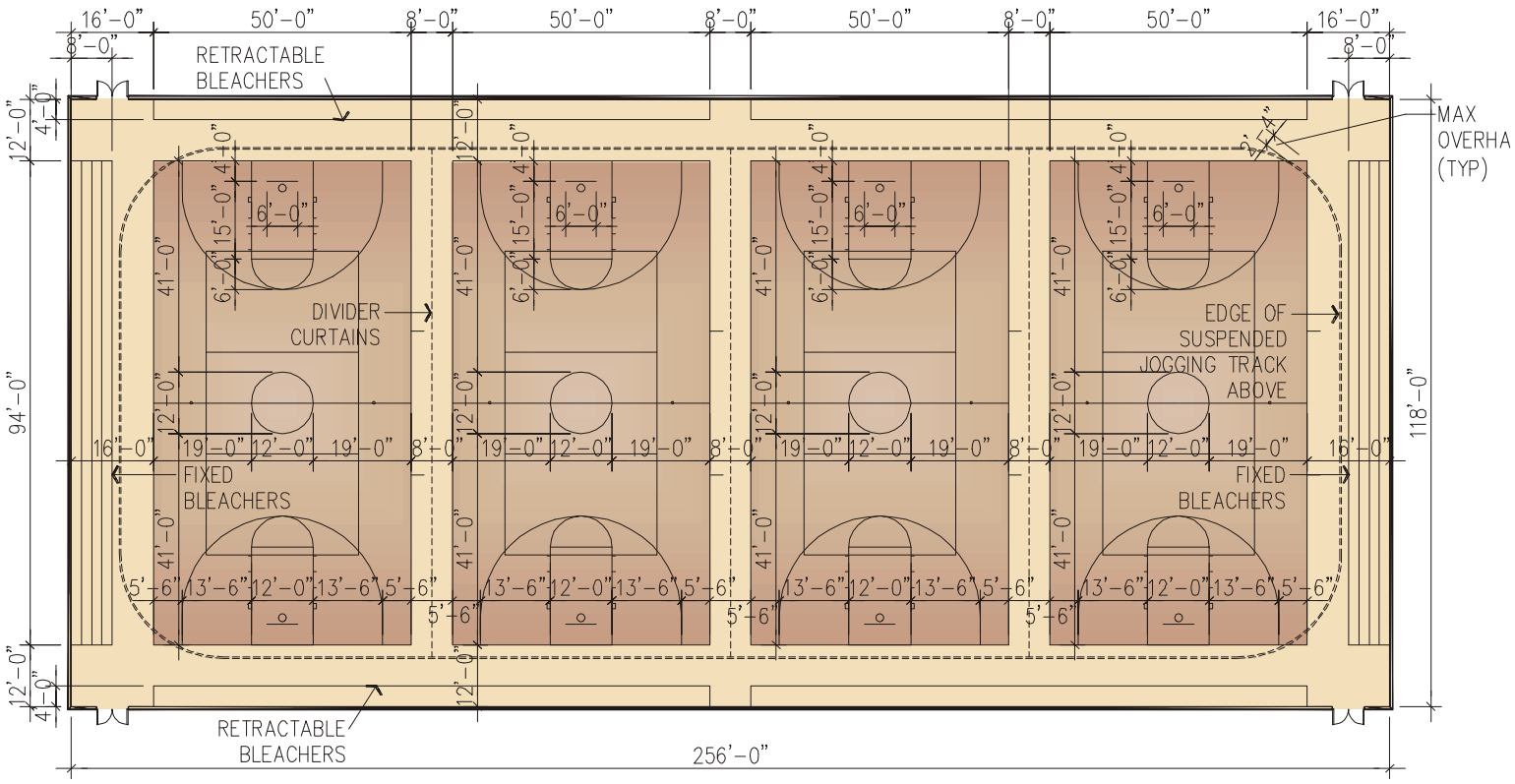
Medium - Sauna, Lockers, Toilet Module



Sauna, Lockers, Toilet
Total Square Feet = 5,887 (573 total lockers)
Men - 372 Lockers - 124 full, 248 double tier
Women - 201 Lockers - 67 full, 134 double tier

Scale: 1/16” = 1’-0”

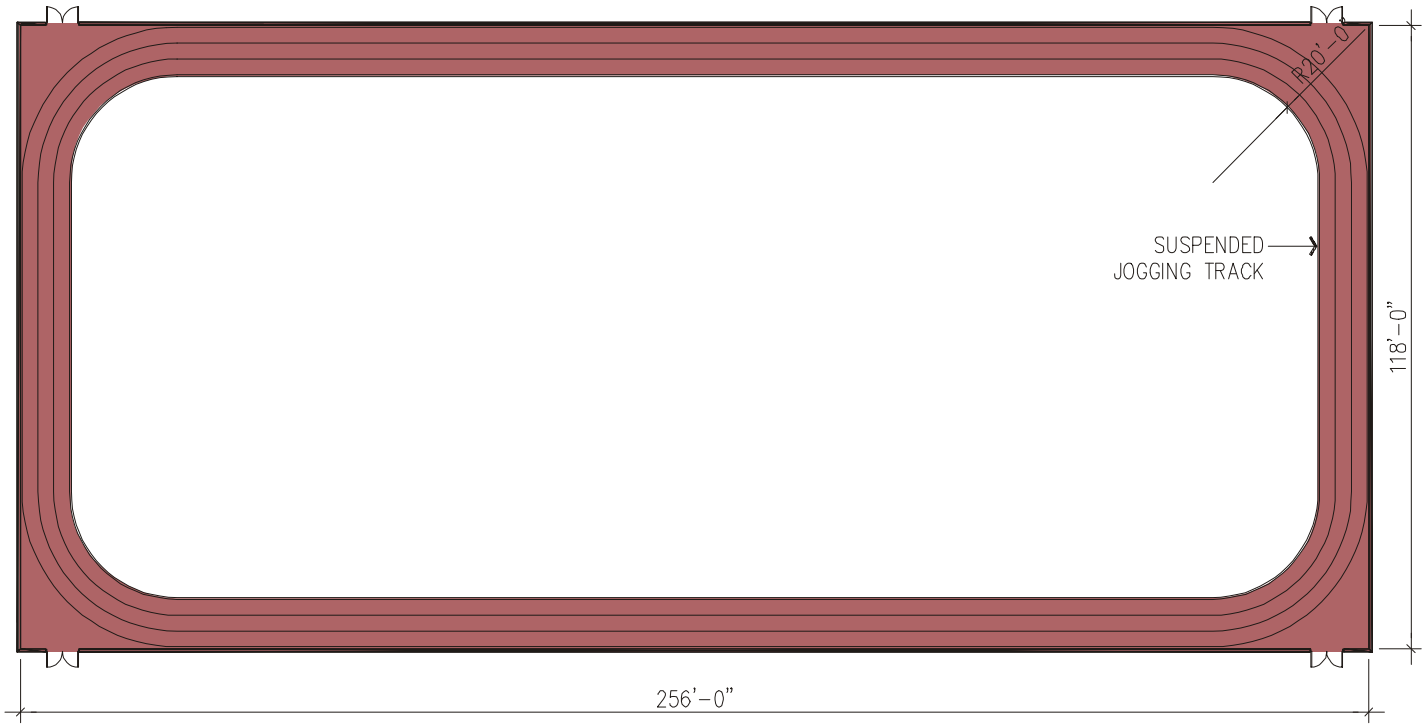
Large Four-Court Gymnasium



Four-Court Gymnasium Module
Total Square Feet = 30,208

Scale: Not to Scale
(Reduced to fit page)

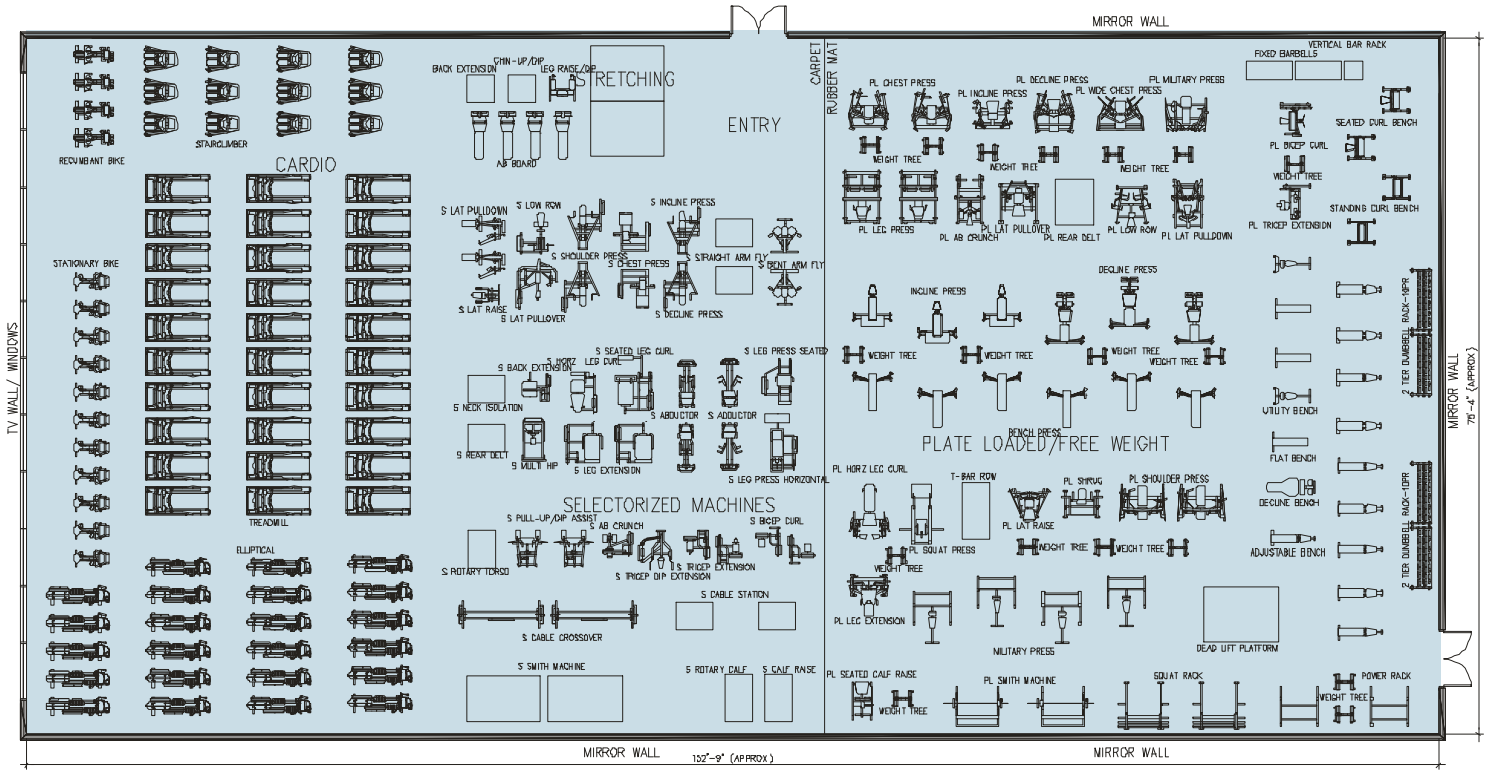
Large Four-Court Gymnasium



Four-Court Gymnasium Module Track
Total Square Feet = 7,201

Scale: Not to Scale
(Reduced to fit page)

Large Fitness Module

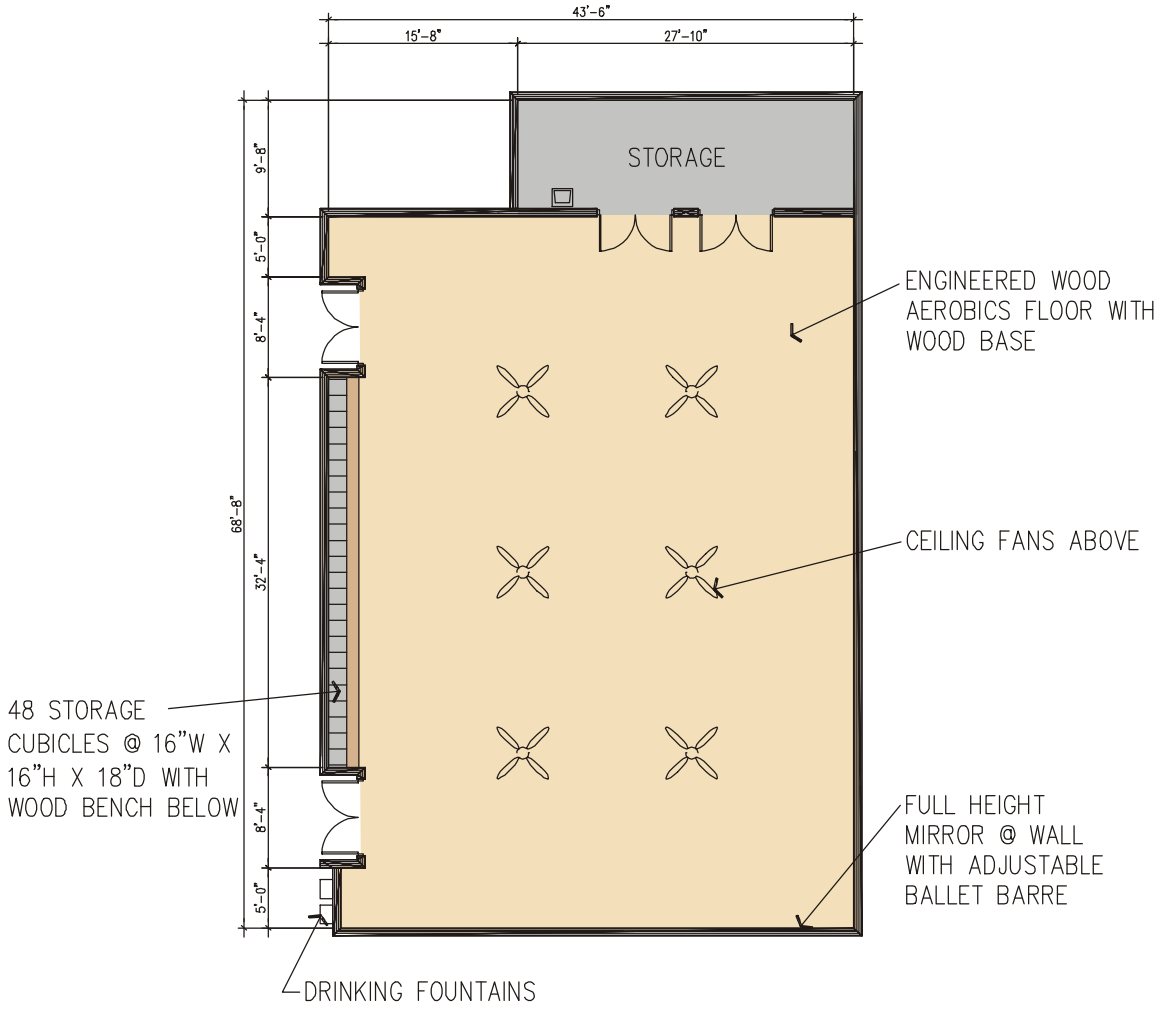


LARGE FITNESS MODULE
TOTAL SQ FT = 11,500

Fitness Module
Total Square Feet = 7,300

Scale: 1/16” = 1’-0”

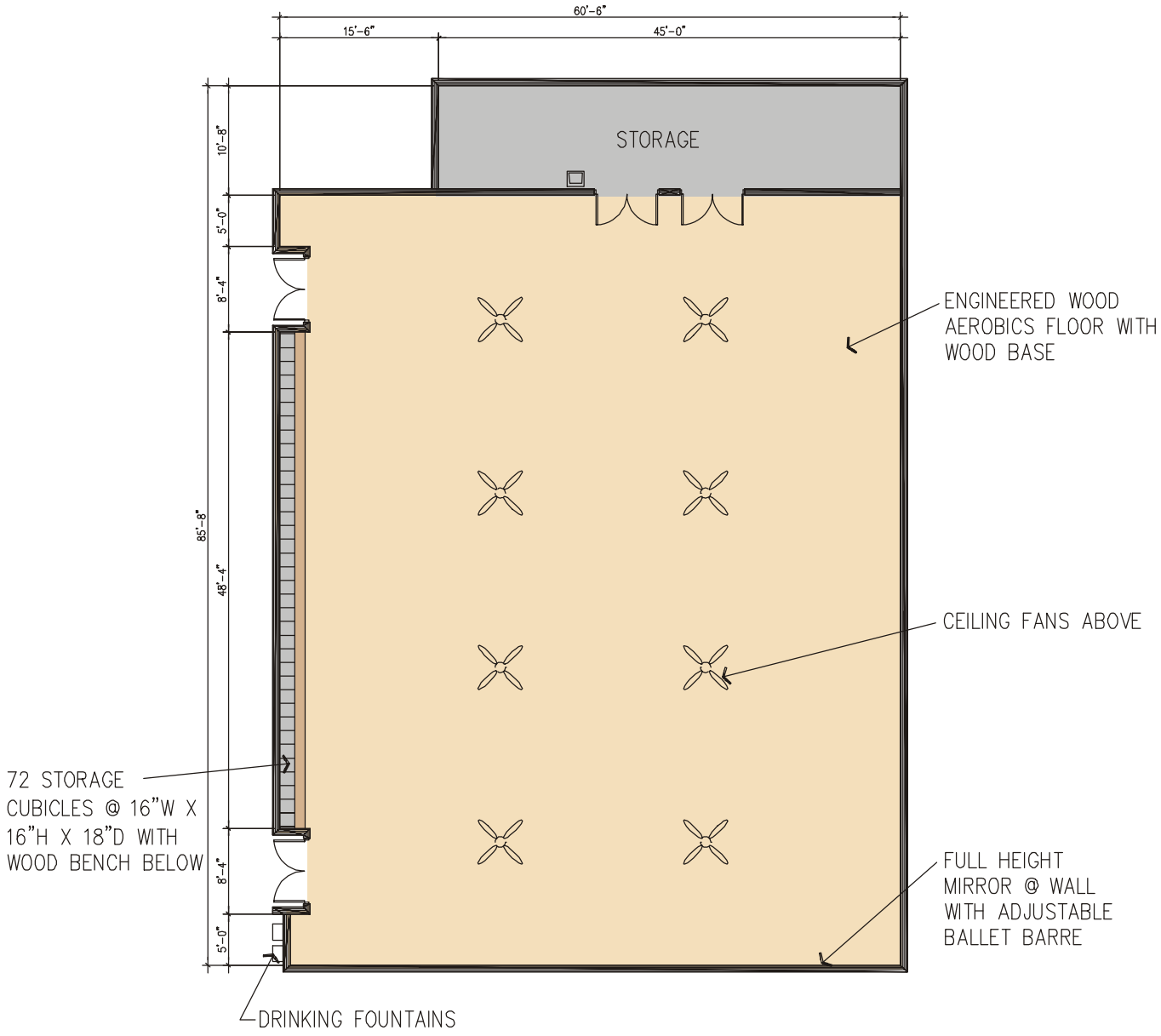
Large Aerobic Exercise Module
(Small Group Exercise)



Small Group Exercise
Total Square Feet = 2,500
Storage Total = 250 Square Feet

Scale: 1/16" = 1'-0"

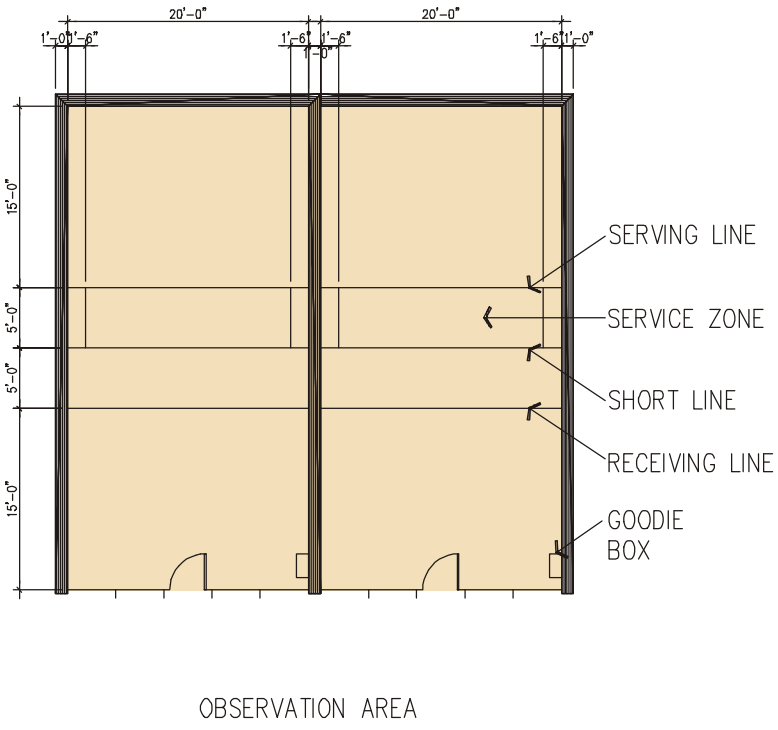
Large Non-Structured Exercise Module
(Large Group Exercise)



Large Group Exercise
Total Square Feet = 4,500
Storage Total = 450 Square Feet

Scale: 1/16" = 1'-0"

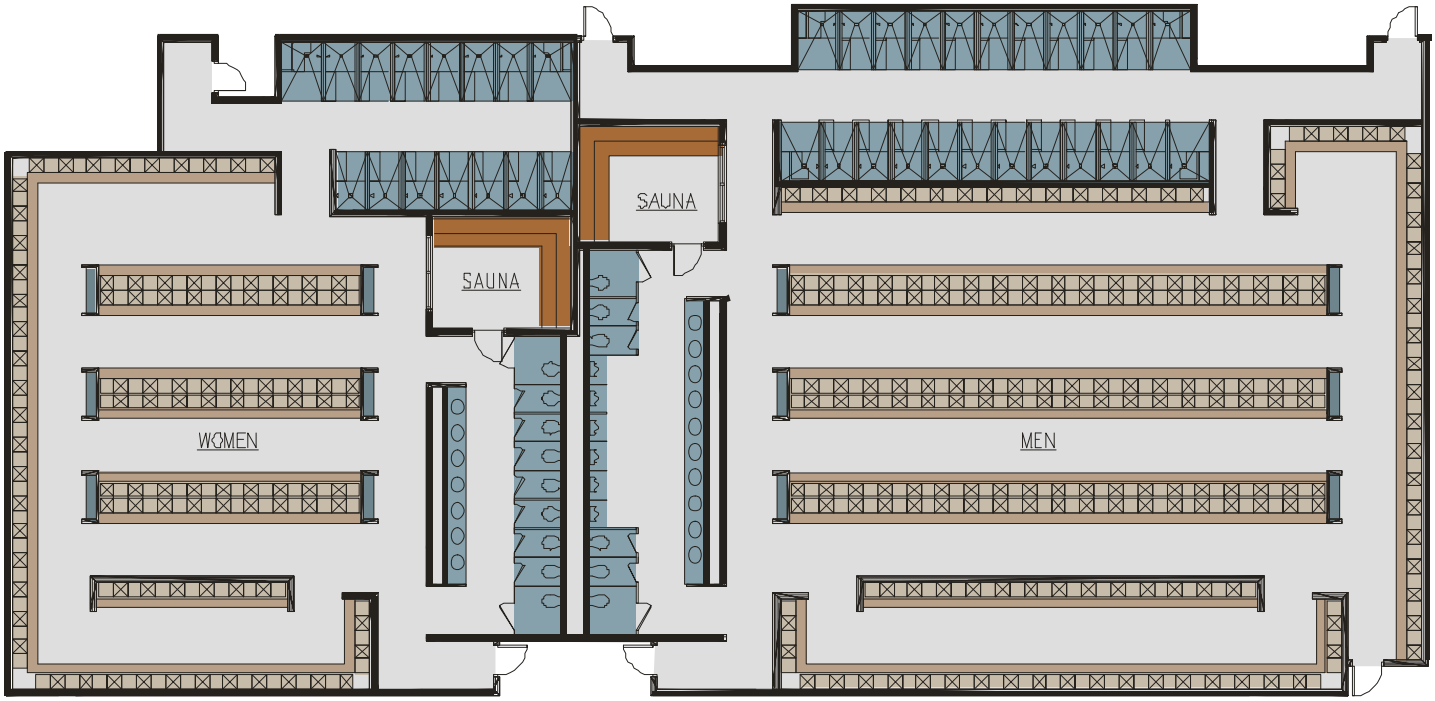
Large - Structured Activity Module
(Racquetball Court)



Racquetball Court
Total Square Feet = 1,600

Scale: 1/16” = 1’-0”

Large - Sauna, Lockers, Toilet Module



Sauna, Lockers, Toilet
Total Square Feet = 9,022 (855 total lockers)
Men - 557 Lockers - 185 full, 372 double tier
Women - 298 Lockers - 100 full, 198 double tier

Scale: 1” = 20’-0”

IV Building Design Criteria

A. Site Criteria

Site Considerations
Site considerations for recreation facilities are generally no more restricting to placement and orientation that general construction of any large facility. The few exceptions are critical for proper performance of the most common site failures; water transmission and uneven settling under the 35K/ square foot or greater loads typical to recreation facility foundations. If feasible, building siting should be proximate to outdoor fields.

Soils testing: Retain a qualified geo-technical engineer to take borings on site and recommend foundation systems. Update existing soils testing older than 5 years, with new borings intermediate to the old locations. With new, undeveloped sites, it is recommended to increase the number of test borings beyond the four corners and one to two intermediate borings typical to a soils report of minimum scope. Maintaining floor flatness for slabs on grade and minimizing cracking requires an understanding of soils conditions across a 170' x 170 to 285' proposed footprint. To avoid being over-conservative in foundation sizing, in soils replacement, or groundwater protections allow the geo-tech to take ample borings to allow for a firm judgment. A 40 to 60 foot boring grid across the site, in variable soils conditions, is considered minimum. Expect a minimum 100 foot grid in historically stable soils.

Soils analysis will reveal any potential problems with situating a recreation facility on a particular site. Typical recreation facility foundations require a drilled or driven pier and grade beam application. Spread footings have a limited application to resist recreation facility loading, and would be confined to smaller one-story projections off the larger two story, open volumes.

Groundwater and runoff: The control of water flow around the site, site runoff and below grade ground water is critical to ensuring the long term viability of activity spaces that utilize special sports flooring. The technical guidelines point out that sports floor products are susceptible to failure in the presence of below grade moisture. Moisture contribution to concrete slabs on grade will warp wood floors and delaminate the adhesives in synthetic flooring. Properly installed vapor barriers beneath slabs can resolve most problems.

Caution: the presence of ground water within the frost depth of the foundation system typically warrants the use of a complete subsurface drainage system and/or the use of perimeter foundation drains. Loose or clayey soils will argue for piping all roof and site runoff into a controlled storm drainage system. Water flow across the recreation facility site from other properties will argue for foundation drains for the entire facility perimeter. Minimum recommendation for any soils conditions are: 1) foundation drain, and 2) minimize roof runoff onto grade. Pipe water away whenever possible.

Substandard soils: It is not uncommon for recreation facility slab-on-grade tolerances to require the removal and replacement of subsurface soils unable to reach proper compaction, offer the engineer reasonable confidence that compaction will be consistent, or provide adequate resistance to overall loads. One element often overlooked in judging the adequacy of soils is the ability of the construction crew to use heavy crane equipment, without risk to the stability of a prepared subbase. Soils must be capable of resisting rutting and pumping while maintaining an optimum moisture content. All other elements being equal, the stability of the subbase to an adequate depth, and the consistency of the same over the whole area of the proposed slabs prevent the most common slab failure problems. Explain floor tolerance and moisture content requirements to the geo-technical engineer at the time of testing.

Potential actions to be taken to meet these criteria are, from least to most expensive:
1) straight compaction of existing soils, 2) amendment and "churning" of soils to a recommended depth followed by compaction of existing soils, 3) removal and replacement of defective soils to recommended depths. Project engineer should reserve a contingency budget amount to anticipate some replacement of deficient soils. If soils are deficient throughout the site, drilled piers may extend further into the ground than anticipated. It is recommended that a reserve of an additional 20% of the estimated cost of drilled piers, be held against the cost of correcting unexpected soils conditions. If not used, the amount can revert to a general building contingency.

Rocky conditions are another category of deficiency in that drilled piers must find stable stone to rest upon if piers are not designed to resist loads via the friction of the entire surface area of the pier. Stone layers of uncertain thickness must be removed. A unit price per cubic yard for stone removal should be set at the beginning of the project. Soils testing cannot pinpoint all areas of unacceptable stone that would impede drilled piers. Rock removal is therefore by nature an unknown quantity. The best the engineer can do is anticipate the potential expense based on soils testing report and size the contingency fund accordingly. For any project of large scale, "getting out of the ground" is the most potentially trying part of the process. Awareness of the problems involved in any project, will help reduce after the fact finger-pointing.

B. General Systems Criteria

HVAC: Outside mechanical heating and cooling is not recommended. Air movement should be controlled with use of a vestibule / airlock with two sets of entry doors.

Operating range:
- System able to maintain 68 to 76 degrees (F) year round at 50% relative humidity or less.
- 8 -12 air changes per hour.
- Temperature controls: Independent to zone.

Mechanical System Noise Control: Noise from the building services should not interfere with the usage of the space. Noise criteria (NC) are a generally accepted, single number standard to determine what amount of sound can exist in a space and still allow full usage. The NC standards are subjective criteria but derived from multiple signal curves calculated along the entire audible range. The NC measure mechanical noise, and more specialized criteria for dampening specific sound frequencies require further engineering. NC standards simply establish how much sound can be contributed to a space before it becomes annoying and no longer falls within the accepted NC class for that usage.

To achieve the criteria at any level, follow these general guidelines: Provide mass in the walls around mechanical equipment spaces. Recommend concrete block masonry be used, whenever possible.

All ductwork shall sheet metal and be constructed for laminar airflow, in accordance with SMACNA guidelines. Minimum 2" thick insulation in all large ductwork, plenums, and fan casings. 1" minimum thickness elsewhere. Liner shall be an erosion resistant glass fiber duct lining. Minimum density should be 2.0 pcf.

Large ducts over 60" shall be subdivided into chambers with metal septums to avoid rumbling (oil canning) of the duct.

Flex duct is suitable for branch ductwork only. Flex duct leading to diffusers or grilles should be at least 5 feet in length and have one 90 degree bend before reaching the diffuser.

Select air handling units to minimize noise generation. Acoustically isolated enclosures and floor supports are common. (Even a lined fan housing can achieve significant reductions of 8 to 10 db in noise level over the system.) Manufacturers of sound isolated pre-engineered housings must provide guarantees that the internal isolation is free from short circuiting.

Avoid locating roof top units RTU's directly overhead or horizontally adjacent to noise sensitive spaces. Recommend locating RTU's only over support spaces such as storage rooms or rest rooms. When located on roofs, provide concrete curbs and sound isolating spring cushions. Roof structure shall be designed to resist static deflection below .025" under dead load and dynamic deflection under unit operation.

Avoid direct metal to metal contact between RTU and ducts by utilizing neoprene or canvas duct connectors.

Rotating variable speed drives must be designed to prohibit sustained rotating speeds of less than 400 rpm.

All pumps require flexible connections for all attached piping and conduit.

Airflow velocity shall be held to the criteria established for the particular NC standards. Refer to NC criteria set for each module. (Assumes 1" duct liner and ducted return) All values in feet per minute (FPM)

Lobby:	NC 30 to 35	840 to 1020	Main Supply 460 to 540 Branch w/ 5' runout
Gyms:	NC 30 to 35	1020 to 1200	540 to 640
Fitness:	NC 30 to 35	1020 to 1200	540 to 640

Utilize low velocity and pressure air distribution system to prevent airflow noise at diffusers. Generally the closer the diffuser to the occupants, the greater the NC reduction *at the diffuser* below the ambient noise level expected for the usage. NC reductions of 8 NC (where diffusers are 12' or less away) to only 3 NC (where diffusers are 20' or more away) are recommended.

Initial duct system design shall plan for medium pressure drop silencers. Silencers shall be located about 3 duct diameters from fan housings.

Fan powered terminals or variable air volume (VAV) boxes shall not be located directly over noise sensitive spaces (NC 35 or less). Volume dampers shall not be located at the diffusers but back at the takeoff point of the branch duct. Recommend locating no closer than 10' from discharge point, with one 90 degree bend between dampers and diffusers.

Avoid using perforated face diffusers, double vane grilles and registers of any kind.

[Each value to be inserted under Acoustical Performance for their respective modules]

Lobbies;	NC-30-35
Gymnasium:	NC-30 to 35
Fitness:	NC-30 to 35
Racquetball	NC-40
Sauna	NC-30

C. General Construction and Design Criteria

Data and design information for each module is abbreviated on the Finish Matrix (page 49). This matrix defines three levels of finish for each building module (Standard, Preferred and Minimum). An expanded narrative for each module follows the Finish Matrix.

FINISH MATRIX

Site	Standard	Preferred	Minimum
Hardscape (walkways, plazas, patios)	Broom finish concrete w/ designed control joint pattern. Edging, curbs and planter beds in concrete.	Concrete w/ accent pavers and designed control joint patterns. Accent paver edging.	Broom finish concrete walkways with small concrete plaza at main entry.

Lobby	Standard	Preferred	Minimum
Ceilings	2 x 2 suspended acoustical tile with gypsum board dropped beams and soffits for accent. Natural light via clerestory or skylights.	2 x 2 decorative, suspended acoustical tiles (in various edge treatments and face designs) with decorative gypsum board ceilings (vaults, cathedral ceilings, raised coffers, & soffits) as accent elements. Skylighting and/or clerestory windows for natural light	2 x 2 suspended acoustical tile. Optional: Dropped gypsum board soffit over control desk, and gypsum board false beams to set off lobby ceiling from adjacent spaces.
Ceiling heights	10' with 9'-0" to lowest element.	Single open volume up to two story height.	9'-0"
Ceiling lighting	Fluorescent 2 x 2 lighting, recessed with accent "can" downlighting. Add decorative surface mount accent lights.	Fluorescent 2 x 2 lighting, recessed and accent "can" downlighting. Add decorative surface mount and/or pendant hung accent lights. Option: Perimeter lighting coves.	2 x 2 Recessed fluorescent area lighting. Uniform pattern with limited accent downlighting.
Lighting levels	Non-uniform, 50 fc max.	Non-uniform, 50 fc max	Uniform, 50 fc max. 35fc min.
Wall materials	8x16 or 8x8 scored ground face CMU with complimentary ground face accent coursing or split face coursing. Natural lighting with alum. windows.	Ground face CMU as primary finish with accent coursing in ground face or split face CMU. Selective use of wood panel and/or fabric wrapped panels as accents. Natural lighting with alum. windows.	8x16 or 8x8 plain face, painted CMU with 8x8 scored CMU accents. Natural light with alum. or hollow metal windows.
Flooring	12x12 to 24x24 Porcelain tile w/ accents	Terrazzo with accents and/or floor patterns & emblems	12x12 or larger Quarry tile, sealed.
Casework / counters	Custom grade (AWI) wood casework w/ solid surface counters	Premium grade (AWI) wood casework with solid surface or stone counters.	Custom grade (AWI) wood casework with plastic laminate counters.

FINISH MATRIX (continued)

Gymnasium	Standard	Preferred	Minimum
Ceilings	Exposed structure. Acoustical mtl. decking, painted. Structure and mechanical ductwork in accent color(s)	Exposed structure. Closed face acoustical decking, painted. Structure and mechanical ductwork in accent color(s)	Exposed structure. Standard metal decking, painted. Option: Structure and/or mechanical elements in accent colors.
Ceiling heights	25'-30' clear	25'-30' clear	25' clear
Ceiling lighting	Single zone, single level pendant mtd. HID lighting. Direct/Indirect. Contactor based electronic lighting controls, single station in gym.	Two zone, pendant mounted HID lighting. Direct/indirect. Contactor to fully electronic controls with data port access/ CPU based programming.	Single zone, single level pendant mounted HID lighting. Contactor based, mechanically key switched.
Lighting levels	75fc min.	50fc and 100fc	75 fc
Wall materials	8 x 16 plain faced Epoxy painted CMU with scored block accents. Natural lighting via windows.	8x16 plain faced CMU with ground faced or scored face CMU accent coursing and/or wainscots. Accent colors.	8x16 plain face epoxy painted CMU Natural light with alum. windows.
Flooring: Courts (non-track)	Hardwood maple strip flooring w/ plywood backing. No. 2 grade, 25/32" overall thickness. Materials to meet or exceed DIN Standards.	Hardwood maple strip flooring with plywood backing and impact absorption sleeper system. No. 2 grade or better. 33/32" overall thickness. Meet or exceed DIN Standards	Poured in place urethane or sheet adhered modified rubber.
Flooring: Running track	Poured in place urethane or sheet adhered modified rubber . Do not use recycled rubber products which may result in "off-gassing."	Dual durometer -poured urethane or sheet adhered modified rubber. Do not use recycled rubber products which may result in "off-gassing."	Poured in place urethane.

FINISH MATRIX (continued)

Fitness	Standard	Preferred	Minimum
Ceilings	2x4 suspended acoustical tiles with 2x2 accent areas and dropped gypsum board soffits or exposed accoustical structure with appropriate acoustical treatment.	2x2 suspended acoustical tiles (decorative edges and/or colors) with gypsum board accent soffits, headers and false beams. An exposed ceiling with appropriate acoustical treatment can also be considered.	Exposed structure or 2x2 or 2x4 suspended acoustical tile, tegular edge.
Ceiling heights	10'-12'-0" to lowest fixed element	12'-0"+ to lowest element (ceiling mounted TV/monitors)	Highest possible, no less than 9'-0" to lowest element. (7'-0" to btm of ceiling mounted equip)
Ceiling lighting	Direct/indirect pendant hung lighting with accent downlighting.	80/20 Indirect/direct pendant hung lighting with decorative surface mtd. accents and accent downlighting	Parabolic lens direct fluorescent lighting with accent downlighting.
Lighting levels	Non-uniform 50 fc min at floor with natural light supplement	Non-uniform, 50 fc max. with natural light via skylights and windows.	50 fc uniform with accents.
Wall materials	8x8 epoxy painted CMU, painted with ground face accent coursing / base. Optional: Ground face accents, or speckle paint finish. Full length mirror wall opposite weights module.	Ground face CMU as primary finish with accent coursing in alternate colored aggregates. Split face CMU accents above contact height. Selective use of gypsum board walls outside of exercise area. Natural lighting with alum. windows. Mirror walls opposite all weights stations.	Epoxy painted plain faced 8x16 CMU with 8x8 scored accents. Natural light with alum. windows. Limited mirrored areas opposite weights stations.
Flooring (Cardio, Weights)	36x36 x 3/8" granulized EPDM, wall to wall. Accents and borders or checkerboard pattern at equipment groupings. Do not use recycled rubber products because they are unsanitary and may cause "off-gassing."	36x36 x 7/8" granulized EPDM tiles fully adhered with and/or color coordinated modified urethane-rubber sheet flooring. Use accents of tile, tile borders around sheet insets at equipment groupings. Do not use recycled rubber products because they are unsanitary and may cause "off-gassing."	36x36 x 3/8" granulized EPDM tiles. Limited to equipment areas only, Fully adhered or loose laid interlocked tiles over concrete substrate.

FINISH MATRIX (continued)

Exercise (Non structured)	Standard	Preferred	Minimum
Ceilings	2x4 suspended acoustical tiles with 2x2 accent areas and dropped gypsum board soffits.	2x2 suspended acoustical tiles (decorative edges and/or colors) with gypsum board accent soffits, headers and false beams.	Exposed structure or 2x2 or 2x4 suspended acoustical tile, tegular edge.
Ceiling heights	10'-0" to lowest fixed element	12'-0" to lowest element	Highest possible, no less than 9'-0" to lowest element.
Ceiling lighting	Same as Fitness Module	Same as Fitness module	Same as Fitness module
Wall materials	Same as Fitness Module with floor to ceiling mirrors along "front" wall. Interior only windows to other exercise modules/ circulation areas. Option: Mirrored side walls.	Same as Fitness module with floor to ceiling mirrors front and side walls. Provide interior windows to other exercise modules.	Same as Fitness module. Optional: interior windows to other exercise modules / circulation areas.
Flooring (Aerobics)	Hardwood maple strip flooring w/ plywood backing and 7/8" sleepers on EPDM cushion pads. No. 3 grade or better. 33/32" overall thickness.	DIN certified Hardwood maple strip flooring with plywood backing and 68% shock absorption EPDM sleeper system. No. 2 grade or better. 33/32" overall thickness.	Modified urethane-rubber poured or fully adhered tile system with shock absorption. 10mm top layer over min. 15mm cushion layer.

Structured Activity	Standard	Preferred	Minimum
Racquetball / Squash Court	Specialized prefabricated system components. Sound absorbing resin core panels, maple wood floor with sleeper system, and solid core back wall and ceiling with protected lighting.	Specialize prefabricated system components not less than sound absorbing resin core panels with DIN rated hardwood maple strip flooring, glass back wall and panel ceiling with recessed lighting.	Specialized prefabricated system, Resin core wall panel system, min. Synthetic panel or maple wood floor system. Glass back wall.
Climbing wall	No minimum system standards applicable for safe operation. Full system required for any level of activity in this module. See full system description, Section IV.	See full system description.	CMU walls with hand holds and portable mats.

FINISH MATRIX (continued)

LOCKER ROOMS	Standard	Preferred	Minimum
Ceilings	2x2 high humidity rated suspended acoustical tiles with decorative edge treatment and/or face colors. Gypsum board dropped soffits and headers.	2x2 suspended acoustical tiles (decorative edges and/or colors) with gypsum board accent soffits, headers and false beams. High density (high humidity rated) non ceramic face designs preferred.	2x2 high humidity rated ceramic faced tiles. Option: dropped gypsum board soffits over lockers or prefabricated metal top closure.
Ceiling heights	9'-0"	9'-0"	8'-0"
Ceiling lighting	2x2 or 2x4 fluorescent recessed, grid mounted lighting. Prismatic lenses.	2x2 fluorescent recessed, grid mounted lighting. Prismatic lenses. Spacing as required to evenly light all functions.	Use standard. Maximum spacing to achieve light levels.
Lighting levels	Uniform 50 fc with care to provide light at faces of lockers	Uniform 50fc min. with care to provide light at faces of lockers	Uniform 50fc, minimize shadowing at face of lockers.
Wall materials	Locker backup walls may be gypsum board over metal studs. Fully exposed walls: plain faced 8x8 or 8x16 CMU, epoxy painted	Plain faced 8x8 or 8x16 CMU epoxy painted.	Epoxy painted gypsum board, two layers over metal studs at 16" o.c.
Flooring	Solution dyed nylon carpet with microbial treatment. 45 oz. finished weight min. Resilient vinyl transitions.	2 x 2 ceramic tile and base with decorative pattern and/or solution dyed nylon carpet with microbial treatment, 60 oz finished weight. Provide decorative borders and insets. Marble transitions.	Use standard.
Casework / counters	Solid surface counters over cantilevered counter assemblies. Solid surface fronts, skirts, and backsplash Rimless sinks.	Solid surface or solid stone counters with matching fronts, skirts and backsplash. Decorative edge treatments. Under counter sinks.	Use standard.

FINISH MATRIX (continued)

TOILET/ SHOWER ROOMS	Standard	Preferred	Minimum
Ceilings	Plaster	Plaster	Suspended gypsum board. Plaster directly over shower areas.
Ceiling heights	9'-0"	9'-0"	8'-0"
Ceiling lighting	Fluorescent lighting coves or recessed soffits over toilets, showers and counters. Option: Supplement with recessed downlighting	Use standard, plus specific placement of recessed downlights for accent.	Flush recessed 2x2 or 2x4 fluorescent lighting with prismatic lenses.
Lighting levels	50fc	50fc	50fc
Wall materials	Full height ceramic tile wet walls and ceramic tile wainscots at fixture areas. Gypsum board on metal studs above 42-48", epoxy painted	Full height 2x2 or 4x4 ceramic tile with borders and/ or patterns	Full height ceramic tile at wet walls only. Gypsum board on metal studs elsewhere, epoxy painted.
Flooring	2 x 2 ceramic tile. Provide single field color with accent border or pattern. Mud set.	2 x 2 ceramic tiles with custom borders and/or patterns. Mud set.	2 x 2 ceramic tile single field color. Mud set showers only, thin set elsewhere.
Equipment	Individual phenolic resin shower compartment, private drying stall. Phenolic or enameled steel toilet compartments, standard colors.	Full tiled individual shower compartments, private drying. Shower and drying seats. Enameled steel toilet compartments, custom color(s).	Individual phenolic shower compartments, group drying area. Phenolic toilet compartments, standard colors.

SAUNA	Standard	Preferred	Minimum
Ceilings	Plaster	Redwood T&G slats, All heart grade redwood.	Plaster
Ceiling heights	8'-0"	8'-0" min. with 7'-0" clear at upper tier.	8'-0"
Ceiling lighting	Centrally placed linear recessed fluorescent, prismatic lens.	Custom recessed downlighting	Use standard.
Lighting levels	35fc	35fc	35fc
Wall materials	CMU substrate with T&G redwood panels. Two wood bench tiers	CMU substrate with T&G redwood slats. Two wood bench tiers.	Use standard.
Flooring	Redwood slat floor with concealed drain.	Use standard. All heart grade redwood.	Removable wood tile "mats" over sealed concrete.

MODULE
Overall Fitness Program Area

Lobby

X-Small — **Lobby area is included within the**
Small — **Miscellaneous Area for each PFF size.**
Medium
Large

Function / Description

Transitional space for visitors and users to check-in upon entry and orient themselves to various activities. A control area within the lobby facilitates security procedures and the issue and collection of equipment such as basketballs and volleyballs.

Essential Design Requirement:

Control Area Requirements:
1) Staff MUST have direct visual and physical access to free weight area.
2) Staff must have visual access or total coverage video-surveillance of cardiovascular area, circuit area, gymnasium and exercise areas.
3) Staff must have visual access or video-surveillance of the entrances to the locker room and the general area of the racquetball courts.

Direct Adjacencies

Entry Vestibule and vertical circulation to upper level areas.
The preferred adjacency for the lobby is as a link between the gymnasium and the rest of the facility so that the gym can function independently during off hours when the remainder of the building is shut down.
Orientation of

Indirect Adjacencies

Corridor system to activity areas.
Restrooms.

Ceiling Height

10'-0" and above preferred with 9'-0" min. to lowest ceiling element.

The intent for lobby ceiling design is to encourage interest and traffic into the facility. Bright, open volumes with views into the facility provide that impression. Though higher ceilings will require an increase in heat / cooling input, it is recommended that the facility utilize the largest volume possible within the space criteria guidelines.

Skylights: Lobby appeal is enhanced by a combination of natural and artificial light. Centrally located skylight for hub type lobby, or several smaller skylights for linear spaces is highly recommended. Attempt to position skylight to accent control area.

Aluminum powder coated or Kynar painted, self-supporting, precut, field constructed units. Glaze with ¾" to 1" thick insulated, laminated glass with no less than 53 -58% light transmittance (typical of clear glazing in an insulated configuration) with low emissivity (Low -E) coating on side 3 of the glazing assembly.

MATERIALS & FINISHES

Ceiling Finishes

Lobby

Highly reflective and sound absorbent materials. Provide 2' x 2' or 2' x 4' lay-in, wet formed mineral fiber acoustical panels, on standard "T" shaped pre-finished metallic grid system. 15/16" or 9/16" wide "T" grids are base selection criteria. See optional considerations below.

Face design: Consider options for face design that introduce a distinctive element to the lobby space. Often a significant impact can be achieved by reserving the use of 2' x 2' tiles to the lobby area. Non-directional face designs are still preferred. Non directional tile decorative options are: 1) various face colors, 2) decorative textures, and 3) dense composition tiles pre-formed with patterns to create custom ceiling effects. Note that patterned tiles have a higher initial cost and replacement cost. Engineer must weigh desired effect with overall cost-effectiveness.

Edge design: "Flush" (square edges) or "tegular" (routed edges). Several routed edge designs are available.

Impact Resistance: Standard durability rating.

Sound absorption for acoustical panels: No less than .55NRC

Surface light reflectance: No less than .80.
Consider lighting placement and lamping types while considering ceiling design. The lobby is the primary area to consider decorative fixtures which may require areas of the ceiling reserved for pendant hung fixtures and/or up-lighting of ceiling features. See lighting guidelines below.

Humidity: No special protections.

Fire resistance: Only Class A materials as determined by recognized testing laboratories such as Underwriters Laboratories (UL). Provide fire resistive ceiling system where floor-ceiling assembly contributes to the fire protection of roof or habitable space above the module.

Seismic requirements: Provide sway bracing for ceiling grids installed in seismic zones where local building officials would normally require such protections.

Overstock: Provide 2% for future replacement.

Accent functional areas, "mirror" floor patterns, or improve aesthetics by the addition of single layer, gypsum board "dropped" soffits or bulkheads on metal studs. Use of dropped soffits allows concealment of lower items (i.e. ceiling fans, structure, or utilities) while allowing the majority of ceiling to be increased in height. Install around perimeters of rooms, or across ceilings in an arrangement of "false beams." Area of solid, sound reflective surfaces should not exceed 15% of the total ceiling area.

"Modular" soffit arrangement: Where possible, design and size soffits and bulkheads to allow the use of full acoustical panels in each direction. For non-modular areas, center ceilings by using balanced border widths where panels are cut to fit.

MATERIALS & FINISHES

Ceiling Finishes (continued)

Lobby

Coordinate lighting: With direct lighting (recessed in ceiling) locate bulkheads and acoustical panel arrangements with the optimum lighting locations first, then consider the pattern of the panels and placement of bulkheads. Consider pendant hung decorative lighting. Where soffits exceed 36" in width and/or 12" in depth, consider supplemental lighting in the bottom of the soffit to avoid shadowed areas across the ceiling plane or at upper portions of wall planes.

Wall Materials

Concrete masonry units (CMU). Moisture controlled Type 1, ground face (also called "burnished-face"), hollow core units are recommended. Standard face block can also be used with various paint finishes. Use a balance of gypsum board / metal stud walls as accents to functions or features. Generally, wall finishes in circulation areas should weight durability criteria more heavily than at seating or control desk areas.

Size and Face design: Plain 8 (high) x 16 (wide) x 8 (deep) units or "scored" with a vertical 3/8" false joint to appear as an 8 x 8 x 8 unit when placed in running or stack bond.

Compressive strength: 1900 psi minimum.

Bond: Running bond for load or non-load bearing partitions. Stack bond for non-load bearing and/or decorative walls only. Fully tooled joints.

Face finish: Ground (machine polished) face is preferred when masonry is used.

Special shapes: Use bullnose corner units at all outside corners.

Wall Finishes

The ground-face concrete block will be have fully tooled joints but remain otherwise unfinished. Several aggregates are available that will affect face color and pattern. It is recommended that selections be made from physical samples of full size units.

Circulation areas: Sealed burnished face blocks or water based epoxy paint finish where standard face block is used. When painted finishes are selected, consider less reflective sheen in paint finishes, eggshell to semi-gloss, to improve perceived "warmth" of the space. Standard block finish may also be an applied heavy mil, "speckle" paint system that provides durability with a variety of color/pattern options.

Seating / socializing areas: Epoxy paint or vinyl wallcovering over gypsum board on metal studs.

Ferrous metals: (window and door frames) Water based epoxy.

Aluminum finishes: (Entrances and windows) Natural clear coated finishes or powder coat paint systems are preferred for consistency of appearance and maintenance. Anodized finishes are not recommended, especially if considering using aluminum frames on the interior. See guidelines for Windows and Doors.

Hardware finishes: Satin finish stainless steel or satin chrome preferred.

MATERIALS & FINISHES

Flooring

Lobby

Selection criteria are based on appearance, durability, and yearly maintenance. Recommendations include terrazzo, porcelain tile, ceramic tile, and resilient tile. Each material has certain advantages / disadvantages.

Terrazzo: Highest initial cost, lowest average yearly maintenance cost, high durability, longest effective life. High impact resistance and traffic abrasion resistance. High resistance to normal staining and good chemical resistance. Finish is monolithic with increasing initial cost if supplemental colors are added for borders or inserts. Requires mechanical equipment to clean and polish. Preferred finish.

3/8" thick, NTMA (National Terrazzo Manufacturers Association) thin-set installation. Terrazzo matching pre-molded baseboard. Solid bronze or bright brass inset strips for control joints and defining floor inserts or accent areas.

Critical item: Terrazzo control joint placement is important to 1) ensure sufficient joints are provided to control cracking, and 2) for joints to occur where they would be most visually pleasing. Following NTMA control joint guidelines without reviewing overall joint patterns is not recommended.

Porcelain tile: Depending on manufacturer, slightly less than or equal in cost to terrazzo in material costs only. Lower initial installation cost, but potentially higher yearly maintenance. Lower impact resistance than terrazzo but equal abrasion resistance. Second to terrazzo in long term effective life. Grouted lines more difficult to keep clean. Larger variety of colors and finishes available. Patterns and borders do not necessarily add to cost. Matte finishes or raised textures necessary for slip resistance. Porcelain can be cleaned manually with periodic strip and clean necessary. Matching base board available. Recommended finish.

5/8" thick over full mortar bed recommended minimum. 12 x 12 or 24 x 24" most common sizes, but a variety of symmetrical and asymmetrical (rectangular) shaped tiles is available. Do not recommend a thin set application for a main lobby. Coordinate transitions to other spaces.

Ceramic tile: Lower cost than porcelain, equal cost for installation. Lower impact resistance with close to equal abrasion resistance to porcelain tile. Good chemical and stain resistance. Fewer options in tile sizes. Matching base board units available. Good color and patterns available. Not recommended as the major field tile for lobbies, but can be used as accent strips or inserts.

No larger than 4" x 4" tiles recommended for accent strips or inserts.

MATERIALS & FINISHES

Flooring (continued)

Lobby

Resilient tile: Lowest initial material and installation cost. Lowest durability. Moderate impact resistance and low abrasion resistance compared to harder materials. Yearly maintenance costs comparable to terrazzo if maintained properly. Good resistance to most stains, limited chemical resistance. Easier to replace than repair. Large variety of colors, with patterns tending to be similar. Solid color tiles available, but at the cost of higher annual maintenance. Good variety of baseboard and floor to floor transition accessories. Minimum acceptable finish. 12" x 12" Solid composition tiles in 1/8" thickness, typical. Recommend rubber base over vinyl base for durability.

Carpet: Not recommended due to high frequency traffic and direct adjacency to the outside. Difficult to maintain correctly on a daily basis. If used, can be provided in lower traffic periphery areas where seating is present. Use primarily to 1) set off an quiet activity area, 2) soften an otherwise hard finished space, or 3) to improve sound absorption overall and especially in conversation / seating areas.

Minimum: Commercial grade carpet with 26 oz yarn weight, 45-60 oz total finished weight. Polypropylene backing, 1/10 minimum gauge with .166" to .1875 min. pile height. 10 year warranty.

Modular Floor mats: Recommend each entry have a recessed mat, constructed of pre-finished metal retaining strips with nylon fiber, or shredded rubber inserts. Semi-open design. The entry mat can be constructed with or without an edge frame, but it is recommended the mat be recessed into the floor for best effectiveness. Typical depth of recess is 5/8," but must be confirmed with the selected manufacturer. Floor mat recesses should span the width of the entry opening and be 4'-6' long in the direction of travel. Mats are intended to be removable to facilitate periodic cleaning of the mat and the floor recess. Floor drains under the mats are optional but recommended for heavy rainfall or snowfall locations. Typical recess depth is ¾".

Substrates: Concrete on grade or properly prepared wood floor sheathing. Recommend that 8mil reinforced or 10 mil un-reinforced polyethylene vapor barrier be applied under all slabs. Slabs to receive porcelain tile or terrazzo finishes should not be hard troweled. "Open" surface with light texture is best for adherence of mortars and epoxies. See critical guidelines for sports flooring in Fitness and Gymnasium modules.

Coordinate floor elevations with adjacent sports floors and carpeted spaces. Terrazzo and tiles can be surface applied materials if transitions to other flooring are coordinated. Follow ADA guidelines for acceptable heights of all transitions. Coordinate entry mat floor recesses in concrete.

Floor tolerances: No more than a single ¼" defect in 10'-0" in every direction, non-averaged for full area of floor. Follow floor materials suppliers' direction for compatible substrate preparation and concrete priming materials.

SYSTEMS

Lobby

Plumbing

A drinking fountain may be required for this module. When required, provide one, electrically cooled, two station unit, designed for ADA use. 1 drinking fountain per lobby when linked to public restroom function. Drinking fountains to meet minimum count for peak occupancy should have one out of all required fountains in or directly adjacent to lobby.

Mechanical (HVAC)

Outside mechanical heating and cooling is not recommended. Air movement should be controlled with use of a vestibule / airlock with two sets of entry doors.

Operating range: System able to maintain 68 to 76 degrees (F) year round at 50% relative humidity or less.

20 CFM/person.
8 -12 air changes per hour.

Temperature controls: Independent to zone.

Lighting

Main module lighting to be a combination of 1) recessed fluorescent down lighting (PL lamps) with pendant hung decorative lighting or 2) pendant hung direct / indirect fluorescent fixtures. Decorative wall sconces are recommended to accent functions or highlight focal points.

Provide lobby lighting control center at control desk. Dimming function is not necessary but may be considered as an option.

Provide down lighting directly over all control desk counters.

Provide display lighting within casework for merchandising or issue functions at Control desk

Provide under cabinet lighting of counters where wall cabinets are used. Linear low profile fluorescent or "puck" style metal halide is acceptable. Metal halide system requires concealed low voltage power supply.

Light Level

40 to 50 foot candles in main circulation spaces.
30 foot-candles in seating / waiting areas, minimum.
50 foot candles at desk height for Control area. Dimming capability optional.

SYSTEMS

Lobby

Power

220/240 single phase for less expensive room lighting and vestibule supplemental heating units. 110v circuit for accent room lighting. Convenience 110v outlets every accessible at 10'-0" intervals along outside walls, and at column covers within larger spaces located more than 10'-0" from the nearest wall outlet.
110v power to circuits as needed to Control Desk, for computer terminals 2 minimum, counter mounted video monitors, multiplex video receiver, tape backup, sound processor for multiple paging sources, music source (CD player) and sound amplifier. Utilize custom raceway in casework. See Architectural Woodworking guidelines above.
Power requirements in this Technical Criteria manual are for CONUS installations. OCONUS power requirements should be addressed on a location by location basis.

Technology / AV

Main power and communications needs are at the Control Desk.

CAT5e minimum data wiring to computer terminals, 2 stations minimum.

Empty conduit routing, (recommend 2" min. diameter) for present or future video cabling from security camera sources around facility. Stub up into base cabinets and continue up into ceiling cavity above control desk.

Sound

PA system to be controlled from the Control area. PA system and intercom system hard-wired throughout the building and controllable by room. The system should be capable of announcing throughout the facility at one time, or by select rooms. System should also be capable of playing music in designated activity areas.

Communications

Acoustical Performance

SYSTEMS

Windows & Doors

Lobby

Window and Door requirements shall meet the Force Protection / Anti Terrorism requirements.

Aluminum framing preferred, with hollow metal frames acceptable.

Provide aluminum entrance frames with an insulated aluminum door (i.e. as if for exterior use) with an insulated glass insert for all exterior frames. Option exists to continue use of aluminum framing and aluminum / glass doors within the lobby for openings visible from within the lobby area. Aluminum finishes may then match in color / sheen and durability.

Utilizing aluminum window system framing to create large open views into adjacent activity spaces and /or to the exterior is highly recommended. Window shading devices may become necessary for tall glass with south to southwest exposures. Consider afternoon sun angles and control desk locations to avoid glare conflicting with the control desk monitoring functions.

Tempered glass is typical to the module.

Door hardware: Satin stainless steel or satin finish chrome preferred. High frequency ball bearing butt hinges are an acceptable minimum. Continuous gear-operated hinges preferred. Concealed or surface applied pivot hinges are not recommended. Continuous hinges will require custom color coordination with the door frames.

ADA (American's with Disabilities Act) provisions:

All accessible features designed for public use shall offer a clear approach of no less than 36" x 36", and be mounted at a height of no greater than 54" and no less than 48."

Provide level transitions between adjacent floor and sauna.
Provide one clear floor space of 48" x 48" directly in front of a bench for wheelchair accessible seating. Solid acrylic grab bars at handicap seating area are optional.

Priority shall be placed on effective use of equipment by disabled patrons and not based solely on minimum access guidelines published by the ADA.

EQUIPMENT

Fixed Equipment

Lobby

Architectural Woodwork:

Control: Provide a visually attractive focal point for 1) entering patrons, 2) control and security functions, and 3) information. Current guidelines suggest one large control area contiguous with both the Lobby and Fitness modules. Expect to provide counters and casework for a minimum of two stations /control personnel within a desk area or two adjacent stations back to back within easy communication of one another.

Materials: Recommend all wood construction for flexibility in configuration. Provide stone or solid surface counters for durability. Make provision for lower counter for ADA access. Provide two tier counter system, more to block view of countertop clutter and controls, than as a privacy barrier. Direct visual control of lobby and fitness areas is critical. "Back wall" (if available) counters may be standard seating height for more extended paperwork functions.

Casework: Premium grade. Solid wood fronts, veneer plywood exposed sides and knee spaces. Interior dividers may be fused and bonded vinyl or plastic laminate particle board. Recommend only 3/8" thick min. plywood for shelving 3'-0" wide and under (1/2" thick otherwise), with wood veneer or fused and bonded vinyl finish. Solid wood face edging for shelving and door edges recommended. PVC edging is an alternative.

Counters: Solid ½" to ¾" thick polymer resin counters. Provide 1 ½" dia. half round edges. Avoid square edges toward patrons. Plastic laminate counters not recommended. Drawer and door hardware: to be commercial grade. Drawer glides to use ball bearing, nylon wheels, rated for 50lbs minimum at full extension. Storage drawers to use 150lb glides. Use concealed door hinges and any metal cabinet pull style. Plastic or nylon pulls are not recommended. Provide through the counter grommets for covering holes needed for computer and device wiring from counter mounted devices.

Flooring: Match lobby or fitness floor. Durable, low maintenance.

SYSTEMS

Fixed Equipment (continued)

Lobby

Configuration: Control casework must accommodate the following functions:

Greeting / information: Standing counter height. Drawer and cabinet for ID check, issue ID. Provide one seated counter height for ADA check-in. Paging device for facility should be located here or with control functions. Provide width for discussion and computer workstation. Direct adjacency with equipment issue and control functions.

Equipment and Laundry Issue: Seated counter height with above and below counter storage units for balls. Storage cabinet and access to laundry pickup and drop-off area for towels. Separate computer station or combine function with greeting station for small to medium sized facilities.

Control counter: Seated or standing counter height with video monitoring and tape storage. If desired, lighting controls and sound controls can be routed to this area of the counter. Should be within in line of sight of lobby and / or fitness spaces intended to be under its control. Lighting controls may be split to remain in line of sight with space served. Sound controls may be centralized.

Sound equipment for music and speech reproduction should be located at or near the control area. Provide glass front, lockable cabinet with adequate ventilation and accessible to utility raceway. See Electrical and Communications guidelines.

Optionally, the control area can provide storage and display cases for vending or recreation merchandise. Glass front, lighted base cabinet units may be faced toward patrons with access from the control counter side. Provide locking hardware.

Utilities: Provide open 4" to 6" deep chase at the back of every base cabinet, run full length of the counters to act as a raceway for power and data communications. Backs of selected base cabinets shall be removable for wiring access. Knee spaces shall have false back panels joined to raceways. Hinged access panels may also be provided for the same function.

MODULE

Gymnasium / Suspended Running Track

Overall Program Area

X-Small	**10,200 SF**	**One-Court Gym (50 x 94 court)**
Small	**17,400 SF**	**Two-Court Gym (50 x 94 courts)**
Medium	**24,600SF**	**Three-Court Gym (50 x 94 courts)**
Large	**31,800 SF**	**Four-Court Gym (50 x 94 courts)**

Running Track

X-Small	1,500 SF
Small	2,100 SF
Medium	2,650 SF
Large	3,180 SF

The running track area is scoped at 50% of the building area due to the mezzanine construction. This has no affect on the space allocated for circulation.

Function / Description

Dedicated space for team activities and competitive play including basketball, volleyball and possible tennis. Multiple court gymnasiums with divider curtains will accommodate simultaneous activities. A suspended running track with three lanes will accommodate walking or jogging activities.

Direct Adjacencies

This component should be located adjacent to the **Entry / Lobby** and function as a freestanding element that can be accessed during off hours while the rest of the facility is closed off. **Restroom** facilities should be provided within the gymnasium building envelope for independent function. **Team Locker Rooms** can be provided adjacent to the Gymnasium for game use during off-hours, but the area for these elements should be deducted from storage and public restrooms. Adjacency to the **Control Desk** is required for check-in and equipment issue.

Indirect Adjacencies

Activity Components
Locker Rooms
Control Desk

Ceiling Height

Ceiling Heights: 30'-0" minimum
Minimum unobstructed height is 30'-0".

MATERIALS & FINISHES

Ceiling Finishes

Gymnasium / Suspended Running Track

General provisions: Exposed structural and mechanical systems are typical to gymnasiums.

Structural Considerations: Roof trusses are typically designed to minimum load values for the spans involved resulting in the most economical truss (by weight) that can be provided. Gymnasiums have additional truss mounted loads that must be taken into account.

- Suspension of basketball backstops
- Divider Curtains and drapes for temporary backdrops
- Ductwork
- Lighting, Temporary Theater Lighting and Sound Equipment
- Company or squad decorative banners
- Suspended jogging track

The Engineer also has the responsibility of reviewing the pattern of the truss webs to coordinate passage of HVAC ductwork and installation of the correct lighting pattern. This should be done in consultation with the structural engineer at the earliest possible date.

Note: Multi-court gymnasiums with perimeter, on grade, running tracks will typically have a span of 150 to 170'. Courts with suspended tracks typically have spans of 120- 130.'

Acoustical Decking:
Provide a flat panel, or exposed cell perforated metal deck with cell depth as required. Minimum sound absorption factor shall be .47, with a NRC of 1.00. Absorption values of .68 to .83 are easily reached for long span acoustical decks. Obtain highest level possible in new construction. Design sound quality should be "lively" with no reverberation.

Critical item: Unless retrofit of an existing space makes their use unavoidable, applied acoustical treatments are not recommended.

Ceiling Finish: "Dry-fall" or "wet-fall" paint system for decking and trusses. Deck painted in white or off white preferred for maximum lighting distribution. Contrasting color of trusses and ductwork offer an opportunity for accent colors.

MATERIALS & FINISHES

Wall Design Considerations

Gymnasium / Suspended Running Track

It is recommended that natural light be allowed into gymnasium spaces through the use of windows and / or overhead skylights. Wall construction will control the ease and relative cost of creating such openings. Recommended wall construction for gymnasiums is an interior wythe of 8" thick to 12" thick concrete block, with 2" of rigid insulation in the wall cavity and a veneer system suitable to the context of surrounding buildings. The two principle structural systems for tall multi-wythe masonry walls are 1) load bearing masonry, or 2) steel frame with non-load bearing in-fill partitions.

Load bearing masonry is generally more expensive than a steel frame system due to the need for additional reinforcing, deeper block sections, and walls designed to resist overall deflection of the building envelope. Openings through load bearing masonry can be accomplished but on a more limited basis. Structural performance of the wall will require opening placement to be carefully coordinated with the structural engineer. Advantages of all masonry construction are primarily in the speed with which the exterior envelope can be constructed. Limited availability of structural steel may also argue for load bearing masonry construction.

Steel frames for tall open structures are preferred for the possibilities offered in window placement and for the relative overall cost of the system. The structural frame supports the majority of the vertical loading from the roof. This allows the masonry wall to be designed to support only its own weight. This allows larger openings to be created through the wall system. One disadvantage is that open steel frames will require the use of cross bracing in selected bays to resist the same shear and wind loads assumed by a load bearing masonry frame. The cross braced bays will generally be visible but can be arranged to perform as a design element within the space. Where structural steel is readily available, the cost savings and the option of providing natural light and views into and out of the space recommend steel frame construction

Steel frame buildings must be fireproofed either by application of spray applied fire resistive materials or full enclosure with masonry veneer. Expect to fully wrap floor to roof columns with concrete masonry. Roof structure above 20' may remain unprotected and exposed cross bracing, when provided solely to resist wind deflection in the structural frame, may be left unprotected. Determine cross bracing locations as early as possible.

MATERIALS & FINISHES

Gymnasium / Suspended Running Track

Wall Materials

Concrete masonry units (CMU). Moisture controlled Type 1, normal weight, hollow core.

Size and Face design: Plain 8 (high) x 16 (wide) x 8 (deep) units or "scored" with a vertical 3/8" false joint to appear as an 8 x 8 x 8 unit when placed in running or stack bond.

Compressive strength: 1900 psi minimum.

Bond: Running bond for load or non-load bearing partitions. Stack bond to be used with non-load bearing partitions only.

Face finish: Manufacturer's standard finish for painted blocks. Ground or burnished faces where painted finish is not desired.

Horizontal accent bands of different colors of burnished block to add visual interest as base courses, "crown" molds, and as wainscots, may be used.

Special shapes: Use bullnose corner units at all outside corners.

Safety: Minimum safety requirements provide for wall-mounted padding, meeting all applicable safety requirements, to be permanently affixed to the walls behind each backboard.

Wall Finishes

Standard block with water based epoxy coating, semi-gloss.

Apply a heavy acrylic block filler spray applied and backrolled to a pinhole free surface, and two epoxy finish coats of 5 to 6 mil Dry Film Thickness (DFT).

Ferrous metals (doors and frames): water based epoxy.

Apply one coat primer compatible with finish coat, and as barrier coat to factory primer.

Two finish coats of 5 to 6 mils. DFT.

MATERIALS & FINISHES

Flooring

Gymnasium / Suspended Running Track

BALLCOURTS:

Substrates: Where possible, provide a min. 4" thick, level concrete slab on grade over properly graded crushed stone sub-base, with a 10 mil polyethylene sheet vapor barrier located directly between the slab and the subbase. Where continuous water is anticipated beneath floors due to local conditions, a subsurface drainage system is recommended.

Ballcourt floors: Machine milled and formed solid maple strip flooring that meets or exceeds MFMA (Maple Flooring Manufacturers Association) specification for a "second or better" grade. Expect some visual variation in color in the wood, but otherwise free from defects. Flooring materials to meet DIN Standards.

Size and construction: 33/32" thick x 2 ¼" width minimum. Provide a floating system with two bonded bi directional plywood backing layers, supported on solid neoprene cushion pads (3/4" high) for an overall performance of 96% or better ball return with 86% or better shock absorption. Floor will be rigid but with minor "give" during normal play.

Flooring accessories:

Holes for volleyball and /or indoor tennis netting support posts may be drilled through the wood floor. Inserts are cast in place with the formation of the slab on grade, or post drilled. Coverplates are used to conceal holes through wood floors when netting equipment is not in use. Recommend only solid brass floor covers to provide good ball return value and skid resistance.

Court overruns: Provide at least 10'-0" of unobstructed space around the perimeter of each regulation-size basketball court. Provide 8'-0" minimum between courts.

RUNNING TRACK:

Track is suspended from the roof system a minimum of 14'-0" above the finished gym floor to the underside of track structure. Three 3'-0" lane widths minimum to balance user capacity versus initial cost. Locate track around the perimeter of the gymnasium module's exterior walls. Track is designed as a level floor, with 2 to 2 ½" thick concrete poured on 1 ½ to 2" deep structural metal deck and steel subframe. Structural frame to meet or exceed floor deflection criteria of 1/640. Track must be rigid and able to dampen all vibration from users.

Track finish: Synthetic sports floor consisting of a solid urethane or catalyzed rubber-urethane composition floor. PVC or vinyl composition floors are not recommended.

Thickness: 10 mil cushion pad with 1/2" overall topcoat thickness.

Alternate material: Granulized new or recycled rubber, granulized EPDM, or both used in combination with polyurethane binders. Directly adhered from cut rolls.

Thickness: Minimum 3/8"
Lane striping applied to the surface.

SYSTEMS

Plumbing

Gymnasium / Suspended Running Track

Water fountains: 1 per two courts.

Provide two water fountains in a single unit combination, or two separate units side by side to allow for one unit to be mounted at ADA height. One cuspidor minimum adjacent to fountains.

Electrically cooled unit recommended. Plan for, or locate fountains near a minimum (1) 110v, 20 amp circuit / outlet for either hardwired or plug-in.

It is recommended that water fountains be placed outside normal traffic paths and recessed into the wall plane if possible.

ADA provisions: Provide a minimum of 48"x 48" clear floor area in front of fountains for wheelchair access.

Mechanical (HVAC)

Mechanical heating, ventilation, and humidity control of the module is mandatory. Air conditioning needs are determined by ACE regional guidelines.

Operating range: System able to maintain 68 - 74 degrees (F) year-round at 50% relative humidity or less.

Preliminary design criteria: (Adjust locally)

Summer: Outside temperature 78 deg. F, RH 50%.

Winter: 32 deg. F., RH 30%

Air changes: 8-12 air changes per hour, negative pressure and minimum of 20CFM/person with CO_2 sensor.

Temperature controls: Independent to room, solid state and programmable. Ability to control peak and off-peak temperatures with 24 hour or one-touch setback programming recommended.

Air movement / control: Fully ducted supply and return. Spiral duct for exposed use within gym module. Main supply with one branch duct per court, minimum. Directional diffusers mounted to spiral duct system shall be engineered for maximum throw and even distribution over courts areas. Return air may be centralized but locate low to floor. No through-wall relief dampers. Natural (non-mechanically driven) ventilation is not recommended. Smoke and combustion duct detectors will be required. CO_2 sensors may be required and are recommended for fully enclosed gymnasium.

Acoustical performance: Insulate all supply ducts and moderate air flow to reduce noise. Isolate all air handling equipment in a separate mechanical space dedicated for that use. Provide sound dampening for all equipment.

SYSTEMS

Gymnasium / Suspended Running Track

Lighting

Coordinate lighting: Review the lighting locations with the ceiling mounted equipment and watch for conflicts.

High Intensity Discharge (HID) fixtures. 750 to 1000w fixtures determined by engineer for 50fc min. across gym floor. 24'-0" on center spacing at 25'-27' above the finish floor is usually adequate. Metal halide lamping with 80% direct and 20% indirect is preferred.

Lighting control: Use of central control panel is recommended. Independent slide or toggle controls may also be used to control fixtures by groups. Grouping needs and/or preferences will be determined by circuit capacity.

No dimming required.

Light Level

50 foot-candles at the floor, minimum. Provide even distribution for courts. If suspended track is at 10'-0" provide supplemental impact resistant lighting under track.

Additional contribution of natural light via windows and/or skylighting is highly recommended.

SYSTEMS

Gymnasium / Suspended Running Track

Power

Convenience power (general cleaning and service): 110v, 20 amp circuits. Spaced at 20'-0" o.c. minimum around the perimeter of the room.

Power considerations for equipment are: 30 amp dedicated circuits, one per backstop motor 30 amp dedicate circuit for ball curtains, one per motor. Synthetic floors may require 30amp circuit for specialized scrubber. Verify maintenance plan as part of power description.

Power requirements in this Technical Criteria manual are for CONUS installations. OCONUS power requirements should be addressed on a location by location basis.

Technology / AV

At a minimum, all facilities should provide an electronic scoreboard in full working order. Scoreboard to be visible to officials and players and appropriate for programmed sports.

If consistent with the mission of the facility, consider providing video connections, wall mounted in gymnasium for portable video camera use, with outlet linked via cable, to monitoring equipment (i.e. video recording, multiplex video control /output, TV monitors, or base wide cable system).

Sound

Ceiling mounted speakers for public announcements.
Sound system: Built-in system for announcing events in the Gymnasium. Suspended directional ceiling speakers, 200 watt minimum output rating, capable of reproducing human speech, minimum. If multipurpose functions are considered, provide speakers capable of CD quality sound reproduction of music.

Communications

Data wiring may be used to provide a scorer's table with links to a scoreboard in the gymnasium module. Scorer's table is generally located for one designated court, at mid court, and requires one (1) 4-outlet, 20 amp power outlet and two (2) Cat5 or better data connections, both in recessed floor boxes, centered under the anticipated table location, but outside the court boundaries. Data connection serves to link scorer's table with time clock on wall (or mounted on backstop) and with wall mounted scoreboard. Conceal conduit.

SYSTEMS

Acoustical Performance

Windows & Doors

Gymnasium / Suspended Running Track

See discussion of acoustical deck above in Mechanical.

Views into the space and admittance of natural light are recommended. Non-operable windows are mandatory for temperature / humidity control. Aluminum or hollow metal frames are recommended. Aluminum only for exterior openings. Tempered safety glass should be typical to the module. The potential for injury does not warrant selective location of safety glass.

Sun Shading devices: If natural lighting through windows is anticipated, shading devices may be necessary to avoid glare across courts at certain times of the day. Two main options for sun shading are 1) electrically operated rolling shades, or 2) draperies. Electrically operated shading devices are mounted in prefabricated housings directly over the window heads or recessed within the window opening. Control is provided via handheld or wall mounted remote with keyed on/off operation. Positional control is optional. Draperies are provided in a "walk-draw" lightweight translucent or opaque curtain, mounted on slide bearing tracks. Curtains must be of a length to extend to the floor and pulled open or shut by means of the long wand attached directly to the overhead support track. User then "walks" the curtain open or shut manually. Plan for "stack" space for collapsed and stored curtain. Multiple smaller curtains reduce stack space and improve ease of use.

Fixed shading from overhand and/or shading fins or grilles applied to the exterior of the building are not recommended. The intent of portable shading from curtains or roll screens is to reduce glare for a 1-2 hour period on east-west exposures twice per day. Permanently mounted shading elements limit design flexibility and are unnecessary for a majority of module use time. A more cost effective solution to glare is a reduction in visible light transmittance of 38% to 18% in exterior insulated glazing, when floor level or tall windows are desired, without cost of shade devices.

Skylights: Linear skylights may be used to enhance natural lighting and enhance visual appeal of the module. Recommend an aluminum framed, gable type skylight with laminated safety glass. Glass should have visible light transmittance of no less than 56% to provide significant light to the floor.

ADA (American's with Disabilities Act) General provisions:
All accessible features designed for public use shall offer a clear approach of no less than 36" x 36", and be mounted at a height of no greater than 54" and no less than 48."

Priority shall be placed on effective use of equipment by disabled patrons and not based solely on minimum access guidelines published by the ADA.

Storage: It is recommended that each gymnasium module be provided with one 300 to 500 square foot storage room with a 6'-0" pair of doors (no center mullion).

EQUIPMENT

Gym and Track Equipment

Gymnasium / Suspended Running Track

Basketball backstops: Two per court, overhead mounted. Electrically operated forward folding type in working order. Mounted to trusses with provided pipe support frame.

Rectangular glass backboard: NCAA official size (3'-6" x 6'-0") fabricated from ½ tempered glass with continuous edge gasket mounted with aluminum flange and breakaway rims. To be retractable or movable in working order.

Goals: Safety reflex type, with 5/8" steel rod ring and "no-tie" steel attachments. 120 thread, retarding type netting.

Divider Curtains: For multi court gyms, it is recommended that at least one court be capable of segregation from other ball activities. Curtains to be electrically operated folding mesh fabric with solid vinyl bottom panels. Curtains are mounted to bottom of trusses on steel subframes. Lower panels are of solid polyester reinforced vinyl fabric, 18 oz./ sq. yd. min weight, to a height of 2'-8" above the finished floor. Middle Mesh is vinyl coated polyester mesh weighing not less than 6 oz. / sq. yd.- from 2'-8" to 18' above the finished floor. Upper curtain portion is generally open to structure above. Specify the curtain be fully retractable to the bottom of the structure.

Volleyball: Steel posts of hollow tubes 3 ½" diameter with powder coated or zinc plate finish. Nets are tensioned to the posts by use of a ratchet winches with removable handles.

Floor plates and sleeves: Galvanized steel tubing, mated to the post diameter, are cast into the floor and the hole is covered with a solid brass plate with removable lid. Use of flip up cover plates is not recommended. Plate lid must be removed from the area of play to prevent accidental injury.

Nets: Specifically designed for volleyball use, black, with heavy web sides and bottom. Double sewn vinyl top binding with rope cable and antenna (for out of bounds markers).

Post padding: All posts must be padded during use. Provide a 6'-0" high, 1" polyurethane foam core, vinyl covered pad. Designed to wrap the pipe with Velcro closures.

Referee platform (optional): If competition volleyball is anticipated, it is recommended a referee's platform be provided consisting of a 1" tubular steel frame, wooden platform, and padded seat. Platform is attached to one vertical post and supported on the floor with adjustable legs. Platform legs are also padded as for posts.

EQUIPMENT

Gym and Track Equipment

Gymnasium / Suspended Running Track

Tennis: Provide manufacturer that can work with the volleyball post insert spacing, rather than adding new post openings for tennis netting. Provide dedicated tennis posts of 3 ½" tubular steel with ratchet winches. Option exists with some manufacturers to use sectional volleyball posts suitable for mounting tennis netting. If used, netting dedicated for tennis use shall be provided with black webbing and solid vinyl top binding. A center tie-down will be necessary, constructed of a 1" steel tube, drilled and epoxy set into the concrete subfloor. A small steel loop within the tube is provided to clip the tennis center net tape directly to the floor. No floor cover is needed for the tie-down.

Portable backstops (optional): For heavy peak use, portable basketball backstops (set for cross court use) may be provided. Storage for the portable units should be provided when not in use. Providing a backstop that will meet all NBA or NCAA requirements will provide a basis for minimum quality. Space needs then become the other primary factor in comparing manufacturers for selection.

Floor protection: If function of gymnasium for other than recreational use is anticipated, it is recommended that a floor protection system for the wood floor be provided. This consists of either 1) reinforced 10 mil polyethylene sheet stored on 10' to 12' wide rolls mounted on portable frames, or 2) neoprene or plastic sheets cut into 3' or 4' interlocking or flush edge units, placed individually to cover selected areas. Units are stacked when not in use.

Lighting, backstop and ball curtain maintenance will require the purchase of a man lift to reach devices 23' to 30' above the finished floor. Wood floors can tolerate 35 lbs per square inch with an evenly distributed load. Synthetic floors can tolerate approximately 55 lbs per sq. in. without permanent deformation of the cushion layer. Both floors require the use of 3/4" plywood panels to cover the travel path of the lift. The plywood properly distributes the point loading of the lift wheels. Size lift according to height needs limited by the amount of floor load imposed. If stored on the premises, plan for storage room doors to have adequate head room for fully depressed lift to fit through door opening.

Bleachers: Bleachers to be wall-mounted, retractable bleachers in good condition and sized to accommodate normal spectator requirements.

MODULE

Overall Fitness Program Area

Fitness Module (Cardio, Circuit, Free Weight)

X-Small	**2,325 SF**	**Flexible Dimensions in each building.**
Small	**4,645 SF**	**Maintain standard of 50SF for**
Medium	**7,300 SF**	**Cardiovascular and Circuit Stations**
Large	**11,500 SF**	**and 65SF for Free Weight Station**

Cardiovascular

X-Small	550 SF
Small	1,350 SF
Medium	2,550 SF
Large	4,000 SF

Circuit (Selectorized Equipment)

X-Small	800 SF
Small	1,150 SF
Medium	1,500 SF
Large	2,300 SF

Free Weight

X-Small	975 SF
Small	2,145 SF
Medium	3,250 SF
Large	5,200 SF

Orientation:

Glare control at eye level is necessary when orienting Fitness Modules to exterior views. Exterior ground level views should be limited to north elevations only. East and west views should be limited to clerestory windows, 7'-0" a.f.f. or higher to sill. South exterior glazed openings are not recommended. When sun shading devices are not used, visible light transmittance or insulated glass is preferred at 38% or less (58% is considered "clear" glazing).

Function / Description

Dedicated area providing space for three separate functions within the Fitness Module (Cardio, Free Weight, Circuit)
Cardiovascular: training equipment such as treadmills, stationary bicycles, stair climbers, etc.
Free Weight: free weight and plate loaded equipment, benches, and storage racks.
Circuit: equipment with pin selected weights

Direct Adjacencies

Well-designed Fitness areas have become the most popular destination in Physical Fitness Facilities. A direct adjacency to the lobby and open circulation will accommodate supervision from the control area, and allow this space to become a major focal point. Cardiovascular theaters, open ceilings, color and lighting will all help to draw users into the space. Key adjacencies for function include Control Area, Locker Room and Storage Area.

Indirect Adjacencies

Ceiling Height

Minimum of 12'-0" ceiling height with 14'-0" preferred.

MATERIALS & FINISHES

Ceiling Finishes

Fitness Module (Cardio, Circuit, Free Weight)

Highly light reflective and sound absorbent materials. Provide 2'x 4' or 2'x 2' lay-in, wet-formed mineral fiber acoustical panels, on standard "T" shaped pre-finished metallic grid system. 15/16" or 9/16" wide "T" grids are preferred.

Face design: Non-directional fissured face designs are preferred to reduce installation cost and waste.

Edge design: "Flush" (square edges) or "tegular" (routed edges).

Impact resistance: standard durability rating.

Sound absorption for acoustical panels: No less than .55NRC.

Surface light reflectance: No less than .80.

To improve lighting distribution within the room, use standard manufacturer's white color. Increase lighting output with off-white colors and/or panels with less than .80 light reflectance. Refer to lighting guidelines.

Humidity resistance: No special protection.
Fire resistance: Use only Class A rated materials as determined by recognized testing labs such as Underwriters Laboratories (UL). Provide fire resistive system components where ceiling-floor assembly contributes to the fire protection of habitable space on floor(s) above the module.

Seismic requirements: Provide sway bracing for ceiling grids installed in seismic zones where local building codes would normally require additional protection from fallout of panels and lighting.

Overstock: Request a minimum of 2% overstock of panels for future replacement.

Accent activity areas with the use of dropped gypsum board false beams. Refer to Lobby guidelines for similar application.

MATERIALS & FINISHES

Wall Materials

Fitness Module (Cardio, Circuit, Free Weight)

Concrete masonry units (CMU). Moisture controlled Type 1, normal weight, hollow core.

Locations: To 6' - 8' above the finished floor (a.f.f.) minimum. Full height concrete masonry preferred. Gypsum board on steel studs may be used above CMU when out of reach of patrons. Freestanding column covers may be CMU or gypsum board on metal studs with full athletic padding to 6'-0" a.f.f.

Size and Face design: Plain 8 (high) x 16 (wide) x 8 (deep) units or "scored" with a vertical 3/8" false joint to appear as an 8 x 8 x 8 unit when placed in running or stack bond.

Compressive strength: 1900 psi minimum.

Bond: Running bond for load or non-load bearing partitions. Stack bond to be used with non-load bearing partitions only.

Face finish: Manufacturer's standard finish for painted blocks. Ground or burnished faces where painted finish is not desired.

Horizontal accent bands of different colors of burnished block to add visual interest as base courses, "crown" molds, and as wainscots, may be used.

Special shapes: Use bullnose corner units at all outside corners.

Wall Finishes

Ground face CMU from manufacturers standard aggregate mixes. Request temporary anti-stain coating (for transportation to site) and penetrating, clear anti-graffiti coating after installation.

Standard block painted with water based epoxy coating, semi-gloss.

Apply a heavy acrylic block filler spray applied and backrolled to a pinhole free surface, and two epoxy finish coats of 5 to 6 mil Dry Film Thickness (DFT).

Gypsum board (when used) with a water based epoxy, semi-gloss finish. Apply one coat compatible primer with two finish coats of 5 to 6 mils. DFT.

Ferrous metals (window and door frames): water based epoxy. Apply one coat primer compatible with finish coat, and as barrier coat to factory primer. Two finish coats of 5 to 6 mils. DFT.

Mirrors: Provide ¼" tempered mirror glass with 15 year warranty silver coating on at least half of two perpendicular walls in free weight area. Mount mirrors at 2'-0" above the finish floor, to a height that provides full body visibility or align with door head height. (See drawing for mirror location)

MATERIALS & FINISHES

Flooring

Fitness Module (Cardio, Circuit, Free Weight)

Substrates: Where possible, provide a min. 4" thick, level concrete slab on grade over properly graded crushed stone sub-base, with a 10 mil polyethylene sheet vapor barrier located directly between the slab and the subbase. Where continuous water is anticipated beneath floors due to local conditions, a subsurface drainage system is recommended.

Critical item: When a new or existing floor's construction cannot be determined to meet the minimum construction noted above, perform a moisture test in order to measure retained and film forming moisture at the surface of the slab. The directly adhered rubber products recommended herein have maximum moisture content standards that cannot be exceeded prior to application of the flooring and over the entire warranty period of the floor. In deficient substrates, additional floor treatment may be necessary to meet these moisture constraints. It is recommended that the selected flooring manufacturer make recommendations suitable to their products and warranty requirements.

Floor tolerances: No more than a single ¼" defect in 10'-0" each direction, non-averaged for the full length of the floor. Follow flooring supplier's recommendations for filler and surface priming materials compatible with the anticipated flooring adhesives.

Modular rubberized tiles - Free Weights:
Type: Granulized new rubber, granulized EPDM, or both used in combination with polyurethane binders. Directly adhered. Recycled rubber not acceptable due to potential of off-gassing.

Sizes: Typically 36 - 38" square tiles, with square edges (non-interlocked). Rolled sheet versions of these products are not recommended in Fitness modules. See finish guidelines below.

Finish: Due to color variations inherent to the products, single, solid color floors are not recommended. Use speckled tiles or complimentary colored tiles in a variegated or regular pattern (checkerboard). Minimum 3/8" thick recommended. Greater thicknesses are available and may be used when above peak-time activity is typical to the facility.
Note: Flooring in excess of 3/8" may require special transitions to avoid access conflicts with the Americans with Disabilities Act. See "ADA" comment below.

Material Weight: Density no less than 65 lbs./cu.ft.

Durability: Shore A hardness of no less than 60.

Floor Edge treatments: Extend the flooring material up the face of wall to 2'-0" a.f.f. and cap with a finished hardwood wainscot trim. Above average physical abuse to the lower half of walls is typical to Fitness modules. Rubber wainscot resists foot scuffs, "tipping" of free weights against walls, and impact from equipment. To optimize adhesion, the paint finish must be deleted directly behind rubber wainscots.

Transitions: Rubber tile to dissimilar floor materials; use solid rubber transition strips sized to match the heights of the dissimilar materials.

ADA provisions: Floor to floor transitions cannot exceed ½" in elevation difference at the transition. Larger stepped transitions must be ramped at no greater than 1:10 (with handrails) to 1:20 (no handrails required).

MATERIALS & FINISHES

Flooring

Fitness Module (Cardio, Circuit, Free Weight)

Cardio Area Flooring Material: Solution dyed, level loop nylon antistatic carpet, with anti-microbial treatment for resistance to mold and mildew. Carpet tile or roll product are both acceptable. See Circuit Area Flooring.

Minimum specifications: 26 oz yarn weight, 45-60 oz finished weight with woven polypropylene backing. 5/64 gauge minimum. 10 year wear / abrasion warranty. Minimum pile height .166" to .1875"

Circuit Area Flooring Material: Carpet tiles in solution dyed, level loop nylon with antistatic and anti-microbial treatment and a solid resilient backing layer. Preferred: Granulized EPDM tiles as used in the Free Weights Module. Uneven wear inherent to circuit training makes roll and seamed flooring not cost effective in the long term.

SYSTEMS

Mechanical (HVAC)

Mechanical heating, ventilation, and humidity control of the module is mandatory. Air conditioning needs are determined by ACE regional guidelines.

Operating range: System able to maintain 68 - 74 degrees (F) year-round at 50% relative humidity or less.

Preliminary design criteria: (Adjust locally)

Summer: Outside temperature 78 deg. F, RH 50%.

Winter: 32 deg. F., RH 30%

Air changes: 18 air changes per hour, negative pressure and 25CFM/person. Will be provided with CO_2 sensor.

Air movement / control: Fully ducted supply and return. Passive or plenum return not recommended.

Supply diffusers are to be adjustable metal grilles with four-way air movement and blade-type vanes. Return air grilles may be perforated plate or blade type. All diffusers to be pre-finished.

Ceiling fans are recommended throughout. Maximum 144 sq. ft. floor area served per fan. Independent wall mounted or infrared remote controls. It is not recommended that fans be controlled in groups.

Temperature controls: Independent to room, solid state and programmable. Ability to control peak and off-peak temperatures with 24 hour or one-touch setback programming recommended.

Ductwork shall be insulated sheet metal rectangular or circular duct routed adjacent to diffuser locations. Use flexible duct drops to diffusers.

Natural (non-mechanically driven) ventilation: Not recommended.

SYSTEMS

Fitness Module (Cardio, Circuit, Free Weight)

Plumbing

Water fountains: 1 per 150 patrons at peak time use. One unit minimum with any size module. Provide two water fountains in a single unit combination, or two separate units side by side to allow for one unit to be mounted at ADA height. Electrically cooled unit recommended. Plan for, or locate fountains near a minimum (1) 110v, 20 amp circuit / outlet for either hardwired or plug-in.

It is recommended that water fountains be placed outside normal traffic paths and recessed into the wall plane if possible.

ADA provisions: Provide a minimum of 48"x 48" clear floor area in front of fountains for wheelchair access.

Lighting

Indirect (80%) direct (20%), pendant mounted fluorescent lighting in linear configurations are preferred. Supplement with round recessed fluorescent (PL lamp) down-lighting to overcome shadows from obstructions or to highlight certain areas.

When ceilings heights do not allow pendant mounted or suspended lighting, direct 2 x 4 lay-in fluorescent fixtures may be used but are not recommended due to lower light quality (excessive glare and static distribution). Reveal edge fixtures with prismatic lenses preferred.

Locations: Lights are located based on the output of the fixture, distribution pattern of the fixture at the anticipated ceiling height, and desired overall light level (measured in footcandles) at the floor. See "Light level" guidelines. Recommendations of fixture spacing may be obtained from the selected fixture supplier or with the services of an illumination engineer.

For preliminary purposes, 2 tube 40w pendant mounted indirect fixtures generally provide the required light level for the Fitness module in continuous strips placed at 4'-0" o.c.. 2 x 4 4-tube (40w) lay-in recessed fixtures provide the same light levels at a rate of 1 fixture per 112 sq. feet. (8' x 14' area). Validate all fixture spacings with the manufacturer.

Lighting control: Use of occupancy sensors to activate lighting by motion detection, is recommended. Independent slide or toggle controls may also be used to control fixtures by groups. Grouping needs and/or preferences will be determined by circuit capacity.

No dimming required.

If used, pendant mounted indirect lighting typically utilizes remote ballast. It is recommended that ballast be located above accessible ceilings. Plan to provide ceiling access to service ballasts.

SYSTEMS

Fitness Module (Cardio, Circuit, Free Weight)

Light Level

50 footcandles at the floor, minimum.

Additional contribution of natural light via windows and/or skylighting is highly recommended

Power

Convenience and specialized outlets required.

Convenience power (general cleaning and service): 110v, 20 amp circuits. Spaced at 10'-0" o.c. minimum around the perimeter of the room and at freestanding columns located more than 10'-0" from the walls or the nearest outlet.

Specialized (equipment) power: 110v, 30 amp dedicated outlets. One per piece of equipment, minimum. Use floor mounted, dual or quad outlet, recessed boxes as required to meet equipment count. Solid brass cover plates, flush mounted.

Power requirements in this Technical Criteria manual are for CONUS installations. OCONUS power requirements should be addressed on a location by location basis.

Critical item: Floor boxes must be mounted above the substrate at a height equal to the thickness of the finish floor system. (i.e. 3/8" for rubber tiles), including the thickness of the box cover plate. Cover plates with flip-up or hinged lids are not recommended. Where outlets are in use, cover plates should be removable or lay flush so as to not contribute to a tripping hazard.

Critical item: Early determination of equipment purchase and a preliminary equipment layout is highly recommended in order to determine in-floor power needs and box locations. The fitness module should be designed to the equipment whenever possible.

Spacing (preliminary): 8'-0" on center, each way.

SYSTEMS

Technology / AV

Fitness Module (Cardio, Circuit, Free Weight)

Data, sound and video required.

Data outlets: Dedicated and located at points to be determined by project engineer as follows: Data outlets at cardiovascular equipment floor boxes to accommodate computerized equipment input / outputs, as occurs. 1 data port per each power outlet provided.

Data ports: required for workstations used to track and/or monitor fitness performance. 1 workstations minimum per 100 patrons / hourly at peak time. Centralized location. Data port required for card access device to monitor access security and peak occupancy. Data ports as required around the perimeter of room for mobile monitoring workstations. 1 data port per convenience outlet location.

Sound

Sound system: Flush recessed ceiling speakers, 100 watt minimum output rating, capable of reproducing the entire audible range for (CD quality) music, minimum.

Sound sources: Commercial amplifier, filtered for EM interference.
- Public Address / microphone station
- Cassette / CD combination unit
- Television monitors.
- Optional: VHS or DVD playback device.

Locate sound equipment in a centralized control location. Typically provide a lockable, glass door vertical rack for mounting the A/V equipment.

Sound amplification requirements are determined by the combined sound source output and the desired reproduction sound level minus the acoustical performance rating of the space. See "acoustical performance" guidelines above.

Video: Option to provide television or CCT monitors at cardiovascular equipment. Ceiling mounted with vertical drops for cable.

Communications

One telephone per 100 patrons at peak use.

Acoustical Performance

Acoustic performance: No extraordinary sound reduction treatments are required. See individual material requirements. In order to analyze the potential need for additional sound reduction, the following criteria apply:

Optimum peak sound level is 40 to 50 db constant (at 1000hz minimum), during peak operation times.

- PNC (Preferred Noise Criteria) Curve 55 to 60 .

Recommended average coefficient of sound absorption of all materials in combination is no less than .50. ("Live" acoustics are desirable)
Acoustical ceilings that follow these guidelines are mandatory
Sound absorption via ceiling materials shall be no more than 5db of the total desired reduction. Provide acoustic wall panel material where needed to bring noise levels and reverberation down to acceptable levels.

SYSTEMS

Windows & Doors

Fitness Module (Cardio, Circuit, Free Weight)

Provide views into adjacent spaces and/or public ways.

- Aluminum or hollow metal frames are recommended.

Tempered glass should be typical to the module. The incidence of impact above the building code minimum should be expected.

ADA (American's with Disabilities Act) General provisions:

All equipment accessible to disable patrons shall have an clear approach of no less than 36" wide by 48" deep when measured from the correct operating position of the equipment.

All aisles between equipment shall be no less than 36" in clear width. 48" is preferred.

All workstations, drinking fountains, communications devices and accessible features designed for public use shall offer a clear approach of no less than 36" x 36", and be mounted at a height of no greater than 54" and no less than 48."

Priority shall be placed on effective use of equipment by disabled patrons and not based solely on minimum access guidelines published by the ADA.

EQUIPMENT

Fitness Module (Cardio, Circuit, Free Weight)

Fixed Equipment

Loose Equipment

	X-Small	Small	Medium	Large
See the Next Page for a complete list of loose equipment for all PFF sizes including equipment included in the "Increment" sum for increasing the Large PFF by population.				

Loose Equipment Notes

Cardiovascular Equipment

Commercial Grade Electronically Controlled

MODULE SIZE	X-SMALL 2,325 SF	SMALL 4,645 SF	MEDIUM 7,300 SF	LARGE 11,500 SF	INCREMENTAL + 5,750 SF
Treadmill	4	10	20	30	16
Elliptical Trainer	3	8	14	23	10
Cross Trainer/Hiker	A	A	A	A	A
Stationary Bike (Upright)	3	5	10	15	8
Stationary Bike (Recumbent)	B	B	B	B	B
Stairclimber/Stepper	1	4	7	12	6
Rowing Machine	0	0	0	0	0
Skier	0	0	0	0	0
Kayak Machine	0	0	0	0	0
Skate Machine	0	0	0	0	0
Subtotal	**11**	**27**	**51**	**80**	**40**

Strength Equipment

Commercial Grade Selectorized/Stack Weight Machines

MODULE SIZE	X-SMALL 2,325 SF	SMALL 4,645 SF	MEDIUM 7,300 SF	LARGE 11,500 SF	INCREMENTAL + 5,750 SF	
Multi-Station (Ex. 6 stations)	1	0	0	0	0	
Leg Extension	C	1	2	2	1	
Leg Curl (Seated)	C	1	1	1	1	
Leg Curl (Horizontal/Prone)	D	D	1	1	D	
Leg Curl (Standing/Kneeling)	D	D	D	D	D	
Leg Press (Seated/45deg)	1	1	1	1	1	
Leg Press (Horizontal/Supine)	D	D	1	1	D	
Leg Press (Lunge)	0	0	D	D	D	
Calf Raise (Seated)	1	1	1	1	1	
Calf Raise (Standing/Donkey)	D	D	D	D	D	
Calf Raise (45deg)	D	D	D	D	D	
Rotary Calf	D	D	1	1	D	
Abductor	0	1	1	2	0.5	K
Adductor	0	1	1	2	0.5	K
Multi-Hip Machine (Rotary Hip)	1	1	1	1	0.5	K
Hip Extension	0	0	0	0	D	
Glute Isolation	0	0	0	0	D	
Bent Arm/Pectoral Fly	C	1	1	2	0.5	K
Straight Arm Fly/Rear Delt	1	1	1	2	0.5	K
Chest Press (Seated)	C	2	2	2	1	
Chest Press (Horizontal/Supine)	D	D	D	D	D	
Incline Press	1	1	1	1	0.5	K
Decline Press	0	1	1	1	0.5	K
Lat Pulldown	C	1	2	2	0.5	K
Lat Pullover	0	1	1	1	0.5	K
Low Row	C	1	1	1	0.5	K
High Row	0	0	0	0	D	
Rear Deltoid (Seated)	0	0	0	1	0.5	K
Rear Deltoid (Horizontal/Prone)	0	0	0	D	0	
Back Extension	1	1	1	1	1	
Lateral/Deltoid Raise	1	1	1	1	1	
Shoulder/Overhead Press	C	1	1	2	1	
Bicep Curl	1	1	1	2	1	
Tricep Extension	1	1	1	2	1	
Tricep Dip Extension (Press)	1	1	1	1	0.5	K
Wrist Curl	0	0	0	0	0	
Neck Isolation	0	0	0	1	0	
Smith Machine (H)	1	1	2	2	1	
Cable Crossover w/ Chin-up Bar	1	1	1	2	1	
Cable Station (2 sided)	1	1	1	2	0.5	K
Ab Crunch	1	1	1	1	0.5	K
Rotary Torso	0	0	0	1	0.5	K
Pull-up/Dip Assist	1	1	1	2	0.5	K
Subtotal	**16**	**27**	**33**	**46**	**20**	

Strength Equipment

Commercial Grade Plate Loaded Machines

MODULE SIZE	X-SMALL 2,325 SF	SMALL 4,645 SF	MEDIUM 7,300 SF	LARGE 11,500 SF	INCREMENTAL + 5,750 SF
Leg Extension	0	0	0	1	0.5 K
Leg Curl (Seated)	0	0	0	1	0.5 K
Leg Curl (Horizontal/Prone) (F)	0	0	0	D	D
Leg Curl (Standing/Kneeling)	0	0	0	D	D
Squat Press (Seated/45deg/Hip) (F)	0	1	1	2	1
Squat Press (Vertical/Hack) (F)	0	1	1	1	1
Squat Press (Horizontal/Supine) (F)	0	D	D	D	D
Squat Press (Jammer/Ground Based) (F)	0	0	0	D	D
Calf Raise (Seated)	0	1	1	1	1
Calf Raise (Standing)	0	D	D	D	D
Calf Raise (45deg)	0	D	D	D	D
Rotary Calf (F)	0	D	D	D	D
Tibia Dorsi Flexion	0	0	0	0	D
Abduction (F)	0	0	0	0	0
Adduction (F)	0	0	0	0	0
Glute Isolation	0	0	0	0	0
Chest Press (Seated) (F)	0	0	1	2	1
Chest Press (Horizontal/Supine) (F)	0	0	D	D	D
Wide Chest Press (F)	0	0	0	1	0.5 K
Incline Press (F)	0	0	1	1	1
Decline Press (F)	0	0	1	1	1
Military/Shoulder Press (F)	0	0	1	1	0.5 K
Lat Pulldown (F)	0	0	0	1	1
Lat Pullover (F)	0	0	0	1	0.5 K
Low Row (F)	0	0	0	1	0.5 K
High Row (F)	0	0	0	0	D
Rear Deltoid (Seated) (F)	0	0	0	1	0.5 K
Rear Deltoid (Horizontal/Prone) (F)	0	0	0	D	D
Back Extension	0	0	0	0	0
T-Bar/Lever Row (J)	1	1	1	1	0.5 K
Lateral/Deltoid Raise (F)	0	0	0	1	0.5 K
Shoulder Press (F)	0	0	1	2	0.5 K
Shrug (F)	0	0	0	1	0.5 K
Bicep Curl	0	0	0	1	1
Tricep Extension	0	0	0	1	1
Tricep Dip Extension (F)	0	0	0	0	D
Wrist Curl	0	0	0	0	0.5 K
Hand Grip Isolation	0	0	0	0	0.5 K
Neck Isolation (F)	0	0	0	0	0
Smith Machine (F)	0	1	1	2	0
Ab Crunch	0	0	0	1	0.5 K
Rotary Torso	0	0	0	0	0
Subtotal	**1**	**5**	**10**	**26**	**16**

	X-SMALL 2,325 SF	SMALL 4,645 SF	MEDIUM 7,300 SF	LARGE 11,500 SF	INCREMENTAL + 5,750 SF
MODULE SIZE					

Strength Equipment

Commercial Grade Free Weight Equipment/Benches

Dumbbell Sets (10pr)	G	G	G	G	G
Dumbbell Rack-1 Tier/5pr	0	0	0	0	0
Dumbbell Rack-2 Tier/10pr	1	2	3	4	2
Fixed Barbell Set (10 Assorted)	1	1	2	2	1
Fixed Barbell Rack	G	G	G	G	G
Weights (Assorted 2.5#-45#)	G	G	G	G	G
Weight Tree/Rack	G	G	G	G	G
Bars (Assorted/Loose)	G	G	G	G	G
Bar Rack	G	G	G	G	G
Benches (Assorted)	2	6	10	16	9
Squat Rack (F) & Bar	1	1	2	2	1
Bench Press (F) & Bar	1	3	4	6	4
Incline Press (F) & Bar	1	1	2	3	1
Decline Press (F) & Bar	1	1	2	3	1
Military/Shoulder Press (F) & Bar	1	2	2	4	1
Dead Lift Platform/Rack (F) & Bar	0	0	1	1	0.5 K
Power Cage/Rack (F) w/ Bar	1	1	1	2	1
Curl Bench (Seated)	1	1	2	2	1
Curl Bench (Standing)	0	1	1	2	D
Leg Raise/Dip	1	1	1	1	1
Chin-Up/Dip	0	0	0	1	0.5 K
Back Extension	1	1	1	1	1
Abdominal Board	1	2	3	4	2
Subtotal	**14**	**24**	**37**	**54**	**27**

Equipment Summary

Cardiovascular Equipment

Electronically Controlled	11	27	51	80	40
Subtotal	11	27	51	80	40

Strength Equipment

Selectorized/Stack Weight Equipment	16	27	33	46	20
Plate Loaded Equipment	1	5	10	26	16
Free Weight Equipment/Benches	14	24	37	54	27
Subtotal	31	56	80	126	63

TOTAL	**42**	**83**	**131**	**206**	**103**

Notes:

(A) Cross Trainer may be substituted for Elliptical Trainer.

(B) Recumbent may be substituted for upright configuration.

(C) Inclusive in Multi-Station machine as an example.

(D) Alternate configurations may be substituted for typical exercise configuration (Ex. Horizontal, Standing, Kneeling, etc.).

(E) Dip extension may be substituted for extension configuration.

(F) Integral weight storage consideration to reduce Weight Tree & space requirements.

(G) Actual count dependant on station count & requirements.

(H) Plate Loaded Smith Machine may be substituted for Selectorized/ Stack Weight Smith Machine

(J) Rear Deltoid may be substituted for T-Bar Row

(K) For ".5" Equipment quantity for "Incremental" Module Size, select a total quantity of pieces that does not exceed the allowance shown in the Subtotal.

MODULE

Exercise Module (Aerobics and Non-Structured)

Overall Program Area

X-Small	**2,200 SF**	**Aerobic 1,200 SF Non-Struct. 1,000 SF**
Small	**2,900 SF**	**Aerobic 1,650 SF Non-Struct. 1,250 SF**
Medium	**4,550 SF**	**Aerobic 2,800 SF Non-Struct. 1,750 SF**
Large	**7,000 SF**	**Aerobic 4,500 SF Non-Struct. 2,500 SF**

Function / Description

Classrooms to accommodate instructional fitness programs that may include aerobics, martial arts, yoga, step-conditioning, boxercise, etc. Rooms should facilitate flexible arrangements for a variety of setups. Equipment setup and tear down time will effect the rollover of exercise modules.

Direct Adjacencies

Storage rooms for convenient removal or retrieval of mats and exercise equipment. Proximity to **Control Desk** for check-in is important. Most classroom participants arrive at the facility dressed in their exercise clothing and go directly to the studio. However, many participants change from their street shoe to a softer shoe. **Storage cubicles** within the room for shoes, purses and small gym bags is necessary.

Indirect Adjacencies

Restrooms. Drinking fountain.

Ceiling Height

10'-0" preferred. 9'-0" minimum.

MATERIALS & FINISHES

Ceiling Finishes

Exercise Module (Aerobics and Non-Structured)

Highly light reflective and sound absorbent materials. Provide 2'x 4' or 2'x 2' lay-in, wet-formed mineral fiber acoustical panels, on standard "T" shaped pre-finished metallic grid system. 15/16" or 9/16" wide "T" grids are preferred.

Face design: Non-directional fissured face designs are preferred to reduce installation cost and waste.

Edge design: "Flush" (square edges) or "tegular" (routed edges).

Impact resistance: standard durability rating.

Sound absorption for acoustical panels: No less than .55NRC.

Surface light reflectance: No less than .80. To improve lighting distribution within the room, use standard manufacturer's white color. Increase lighting output with off-white colors and/or panels with less than .80 light reflectance.

Humidity resistance: No special protection.

Fire resistance: Use only Class A rated materials as determined by Underwriters Laboratories (UL). Provide fire resistive system components where ceiling-floor assembly contributes to the fire protection of habitable space on floor(s) above the module.

Seismic requirements: Provide sway bracing for ceiling grids installed in seismic zones where local building codes would normally require additional protection from fallout of panels and lighting.

Overstock: Request a minimum of 2% overstock of panels for future replacement.

Accent functional areas or improve aesthetics by the addition of single layer, gypsum board "dropped" soffits or bulkheads on metal studs. Use of dropped soffits allows concealment of lower items (i.e. ceiling fans, structure, or utilities) while allowing the majority of ceiling to be increased in height. Install around perimeters of rooms, or across ceilings in an arrangement of "false beams." Area of solid, sound reflective surfaces should not exceed 15% of the total ceiling area.

"Modular" soffit arrangement: Where possible, design and size soffits and bulkheads to allow the use of full acoustical panels in each direction. For non-modular areas, center ceilings by using balanced border widths where panels are cut to fit.

Coordinate lighting: With direct lighting (recessed in ceiling) locate bulkheads and acoustical panel arrangements with the optimum lighting locations first, then consider the pattern of the panels and placement of bulkheads.

Where soffits exceed 36" in width and/or 12" in depth, consider supplemental lighting in the bottom of the soffit to avoid shadowed areas across the ceiling plane or at upper portions of wall planes.

MATERIALS & FINISHES

Exercise Module (Aerobics and Non-Structured)

Wall Materials

Concrete masonry units (CMU). Moisture controlled Type 1, normal weight, hollow core.

Size and Face design: Plain 8 (high) x 16 (wide) x 8 (deep) units or "scored" with a vertical 3/8" false joint to appear as an 8 x 8 x 8 unit when placed in running or stack bond.

Compressive strength: 1900 psi minimum.

Bond: Running bond for load or non-load bearing partitions. Stack bond to be used with non-load bearing partitions only.

Face finish: Manufacturer's standard finish for painted blocks. Ground or burnished faces where painted finish is not desired.

Horizontal accent bands of different colors of burnished block to add visual interest as base courses, "crown" molds, and as wainscots, may be used.

Special shapes: Use bullnose corner units at all outside corners.

Wall Finishes

Standard block with water based epoxy coating, semi-gloss.

Apply a heavy acrylic block filler spray applied and backrolled to a pinhole free surface, and two epoxy finish coats of 5 to 6 mil Dry Film Thickness (DFT).

Ferrous metals (doors and frames): water based epoxy.

Apply one coat primer compatible with finish coat, and as barrier coat to factory primer.

Two finish coats of 5 to 6 mils. DFT.

Mirrors: Provide ¼" tempered mirror glass with 15 year warranty silver coating on 50% of at least two perpendicular walls. Mount mirrors at 8" above the finish floor to a height that provides full body visibility or align with door head height.

MATERIALS & FINISHES

Flooring

Exercise Module (Aerobics and Non-Structured)

Substrates: The same substrate provisions for Fitness and Cardio floors apply to the requirements of this section.

Aerobic floor: Machine milled and formed solid maple strip flooring that meets or exceeds MFMA (Maple Flooring Manufacturers Association) specification for a "second or better" grade.

Size and construction: 33/32" thick x 2 ¼" width minimum. Provide a floating system with two bonded bi directional plywood backing layers, supported on neoprene cushion pads (3/4" high) and continuous 7/16" to ¾" thick EPDM cushion pad for an overall performance of 68% or better shock absorption. DIN certified for aerobic use. Verify absorption requirements with activity coordinator.
Floor will have noticeable flex but with firm feel during aerobic activities.

Retrofit floors will require a sleeper system above the cushion pad for leveling purposes.

SYSTEMS

Plumbing

No plumbing provisions for this module, however, a drinking fountain or water cooler should be located in an adjacent space.

SYSTEMS

Exercise Module (Aerobics and Non-Structured)

Mechanical (HVAC)

Mechanical heating, ventilation, and humidity control of the module is mandatory. Air conditioning needs are determined by ACE regional guidelines.

Operating range: System able to maintain 66 - 72 degrees (F) year-round at 60% relative humidity or less.

Preliminary design criteria: (Adjust locally)

Summer: Outside temperature 78 deg. F, RH 50%.
Winter: 32 deg. F., RH 30%

Air changes: 12-14 air changes per hour, negative pressure and 25CFM/person. Will be provided with CO_2 sensor.

Temperature controls: Independent to room, solid state and programmable. Ability to control peak and off-peak temperatures with 24 hour or one-touch setback programming recommended.

Air movement / control: Fully ducted supply and return. Use spiral duct if existing ceiling is exposed structure. Directional diffusers mounted to spiral duct system shall be engineered for maximum throw and even distribution. Ceiling-mounted diffusers will be standard 2x2 units with directional vanes. Return air may be centralized.

Natural (non-mechanically driven) ventilation: Not recommended.

Lighting

Indirect (80%) direct (20%), pendant mounted fluorescent lighting in linear configurations are preferred. Supplement with round recessed fluorescent (PL lamp) down-lighting to overcome shadows from obstructions or to highlight certain areas.

When ceilings heights do not allow pendant mounted or suspended lighting, direct 2 x 4 lay-in fluorescent fixtures may be used but are not recommended due to lower light quality (excessive glare and static light distribution; e.g. uniform lighting causes greater eye fatigue over long periods of time). Reveal edge fixtures with prismatic lenses preferred.

Dimming capability recommended but not required.

Light Level

50 - 70 foot-candles at the floor.

Natural light via windows is not recommended. However, internal views to other spaces via windows is highly recommended.

SYSTEMS

Exercise Module (Aerobics and Non-Structured)

Power

Convenience power (general cleaning and service): 110v, 20 amp circuits. Spaced at 20'-0" o.c. minimum around the perimeter of the room.

Power requirements in this Technical Criteria manual are for CONUS installations. OCONUS power requirements should be addressed on a location by location basis.

Technology / AV

Provide recessed A/V rack with commercial grade amplifier, or amplifier and input/output control device, with minimum 2 microphone inputs. 400 watt minimum continuous output rating. Cassette / CD player with remote control. Provide two microphone outlets wired to locations remote from one another within the module for directed activities.

Sound

Ceiling mounted speaker for music reproduction.

Sound system: Recessed ceiling speakers, 100 watt minimum output rating, capable of reproducing CD quality sound.

Communications

SYSTEMS

Acoustical Performance

Windows & Doors

Exercise Module (Aerobics and Non-Structured)

Aerobic activity will require partitions to be sound rated to 53STC minimum. Where glass walls are used to enhance interior views, front these walls to interior circulation and not into other activity spaces. One exception is the gymnasium. All other sound performance characteristics are comparable to the Fitness Module.

Hollow metal interior windows from traffic or lobby areas are recommended. Tempered safety glass is typical where glazing is 18" or closer to the floor. Tempered or laminated safety glass above that point depends on the potential for impact from adjoining activities. It is recommended tempered glass be used when precise potential cannot be determined. Adding horizontal mullions at 32-36" A.F.F. also reduces risks from casual contact with glazing.

Aluminum frames should be used when consistent with the interior design of adjacent spaces.

EQUIPMENT

Fixed and Loose Equipment

Exercise Module (Aerobics and Non-Structured)

Floor mats: Provide virgin vinyl fabric, double stitched and heat seam welded, over dense polyurethane foam core. Square edge. 4' x 8' mats sizes are recommended.

Architectural Casework: Provide storage cubicles along one wall of the module for incidental storage during activities:

Provide one cubicle per person at room's maximum occupant load. Cubicle design is generally an open face cube in modular "banks" aligned on one wall to counter top height or vertically with the tallest cubicle 5'-0" above finish floor. Cubicles shall be minimum 14" x 14" (18" x 18" preferred) face opening x 24" deep.

Construct cubicles of ½" minimum particle board shell with ½ plywood horizontal shelves. Shelves to be fixed. Entire construction veneered with .048 horizontal grade, high pressure plastic laminate. All sides, all surfaces. Edge trim of cubicle frames shall be solid hardwood (bonded) or 3 mil PVC edging routed into panel edge. Use of plastic laminate edges is not recommended.

If counter height, provide 1-1/2" thick .050 high pressure laminate counter with square edge front and ½" x 4" high backsplash against any wall surfaces abutting counter.

ADA (American's with Disabilities Act) General provisions:

All accessible features designed for public use shall offer a clear approach of no less than 36" x 36", and be mounted at a height of no greater than 54" and no less than 48."

Priority shall be placed on effective use of equipment by disabled patrons and not based solely on minimum access guidelines published by the ADA.

MODULE

Overall Program Area

Structured Activity

X-Small	**2,000 SF**	**1 RB Court + 1,150 SF Discretional Use**
Small	**2,000 SF**	**1 RB Court + 1,150 SF Discretional Use**
Medium	**3,000 SF**	**1 RB Court + 2,150 SF Discretional Use**
Large	**4,000 SF**	**2 RB Courts + 4,000 SF Discretional Use**

Function / Description

Dedicated components that are designed and equipped to accommodate limited activities. Racquetball courts cannot be used for squash. Discretional space is allocated for each facility size and should be designed to accommodate the unique requirements of each facility. Some uses of this space may include a climbing wall, spinning studio, additional racquetball or squash court, additional aerobic studio, increased fitness, etc. Other uses could include a Health Assessment area.

Direct Adjacencies

Structured activity components require scheduled times. Proximity to the control desk for check-in and equipment issue is important.

Indirect Adjacencies

Restrooms. Main corridor system.

Ceiling Height

Racquetball Court ceiling height 20'-0"

Climbing Wall ceiling height 20'-0" to 30'-0" max.

Spinning Studio ceiling height 12'-0" to 20'0" max.

MATERIALS & FINISHES

Design Guidelines

Structured Activity

Description is of court area itself. Area surrounding court module may be similar to gymnasium construction or dedicated seating / corridor adjacent to racquetball area. Wall and floor construction around the racquetball courts should be of the same quality and durability as any recreation module within the facility. Refer to space planning guidelines for possible layouts. This module's guidelines assumes a racquetball function with a 20' x 40' x 20' high court, in single or multiple configuration.

Finished assembly size of courts, including wall thicknesses, are approximately 1'-2" larger than interior dimensions.

Squash courts use different court dimensions and particular features. Refer to squash court guidelines at the end of this section.

General design considerations:
Racquetball facilities are essentially rooms within a room. Exterior envelope, floor and roof system are assumed to be existing. With regard to special treatment of the building envelope: the floor substrate should follow the same guidelines for the Fitness module whether wood floors for courts or synthetic floors in the adjacent seating / waiting area are under consideration. Floor tolerances and wall tolerances require precise construction in court systems. If space is tight, the exterior walls or interior partitions must be plumb to within ¼" in 10'-0" in the vertical and horizontal planes prior to starting the walls for the courts. Courts construction must also wait until environmental conditions within the building envelope meet recommended minimums and can be maintained during and after construction. For more detailed guidelines, see the requirements for each individual component.

Racquetball courts can be built by the general contractor with the assistance of a proper set of drawings and specifications and his or her own experience. Under a general contractor, the court components will be purchased individually and several suppliers will contribute to a single court, with the general contractor guaranteeing their proper coordination. Courts may also be constructed as a single unit by specialty suppliers (subcontractors) who provide court construction as a service with the sale of components. The subcontractor will then guarantee the performance of all components in their control. A racquetball court subcontractor can provide all components of a court with the exception of the final tie-in of electrical and HVAC connections to the court itself. The quality control of a single subcontractor is preferred, but tends to be more expensive and does not always produce a superior installation. As specialized construction, it is recommended that the Engineer consider the experience of contractors and the quality of court subcontractors in the region, prior to deciding to use multiple or a single court contractor/supplier.

MATERIALS & FINISHES

Ceiling Finishes

Structured Activity

General: Finished ceiling height for racquetball court is 20'-3" or greater. The necessary clear space above this height must take into account the thickness of the court roof, the height of lighting housings, clearance for ductwork overhead, and the depth of structural elements that are part of the floor/roof assembly above. As a preliminary guideline, allow 2'-0" plus the depth of the structure system above 20'-0" to accommodate these elements.

Finish: Highly light reflective and high impact materials.

Material: Pre-formed high density (62 lbs / cu.ft.) ½" thick resin core panels on concealed T- spline system. Panels come in either unfinished resin core for field painting, or prefinished white resin / laminate composite panels. Prefinished systems are preferred for their reduced life-cycle maintenance.

Face design: Smooth

Panel Edge design: Flush butt joints with no more than a 3/32" gap between panels

Impact resistance: high impact and 80 shore A durability rating.

Sound absorption for panels: Fiberboard may be mounted directly behind resin core panels to reduce "drum" effect of hard panels systems. Sound batts are also provided to reduce transfer noise to other spaces or in multi-court applications.

Surface light reflectance: No less than .80.

Humidity resistance: No special protection.

Fire resistance: Use only Class A rated materials as determined by Underwriters Laboratories (UL)

Fire resistive gypsum board mandatory when used as part of the ceiling system.

MATERIALS & FINISHES

Wall Materials

Structured Activity

Front and Side walls: High density resin core panels.

Sizes and thicknesses: ½" Thick resin core application over ½" thick sound cushion layer. Consistency in density of front and side wall materials is critical to proper ball performance.

Metal studs: 33ksi yield strength, load bearing studs, 18 gauge minimum. Typically 4" studs for 20' height, spaced at 16" o.c. Six inch (6") studs are preferred.

Face finish: Smooth and flush. Surface variations equal to or less than 3/32" gaps or variations in plane at panel joints. System walls "float" in relation to one another. Inside corners are kept loose with 1/16"- 1/8" gap at the vertical corners.

Critical item: Wall finish panels do not extend to the floor. End of panels are held off the substrate ½" minimum to allow walls to contract and expand without warping the surface. See floor guidelines below.

Back wall: Resin panel system to match side walls, OR glass walls when visual control and / or spectators are desired. The back wall of a court is only required to be 12'-0" high. The upper portion of the wall can be open to the spectator area, or as is often the case, allows for an upper level viewing area to look unobstructed on the court below. Competition courts generally prefer that the back wall run full height, but can use an 8'- 12' high glass partition at the floor line and use a solid wall panel system for the remaining height.

Glass wall system: ½" thick tempered glass walls and doors. Tall vertical walls (above 8'-0" a.f.f.) will require use of vertical glass stiffeners. Glass is structural and utilizes upper and lower channels only to retain 8' - 10'-0" high glass systems, with added edge panel hardware for tall glass systems.

Caution: review glass panel attachments to floor line with supplier to provide proper support and understanding of the floor to floor transition between spectator floor and the court floor. If both systems are not wood systems, court substrate will be recessed approximately 2 ½" in relation to the spectator area.

Back wall doors shall be solid core wood or frameless glass doors with face finish to match wall system. In resin core applications, manufacturers of panels offer face panels for door applications. Door frames, where used, shall be heavy gauge aluminum with adjustable stops to provide a flush installation within regulation tolerances for court wall faces.

Critical Item: No surface fasteners or projecting hardware shall be used on the interior court face for any components. Accessory items, including doors and frames shall all use concealed fasteners. Door hardware shall be flush and recessed in the face of the door on the court side. Door width shall be no less than 34" clear for ADA use.

MATERIALS & FINISHES

Wall Finishes

Flooring

Structured Activity

Manufacturer's standard finish for resin core panels. Gypsum board systems require a minimum prime plus 2 coats water based epoxy paint to 5 -6 mil DFT overall, semi-gloss.

Substrates: Follow the same guidelines and cautions for substrate construction in the Fitness Module.

Floor tolerances: No more than ¼" in 10'-0" each direction, non-averaged for the full length of the floor. Follow wood flooring supplier's recommendations for leveling uneven substrates.

Materials: Machine milled and formed solid maple strip flooring that meets or exceeds MFMA (Maple Flooring Manufacturers Association) specification for a "second or better" grade.

Size and construction: 33/32" thick x 2 ¼" width minimum, bonded to 2 layer bi-directional ½" thick plywood panels. Provide a system with ¾" thick wood or metal and wood composite support sleepers mechanically fastened to floor panels. Cushion pads on the underside of the sleepers is optional. Expansion control is critical to floor system. DIN certified system for court use.

Floor Edge treatments: Racquet ball court floors do not extend to the wall surfaces. Floor edge is held back from wall a maximum of 3/16" at head walls and ½" maximum at side walls, to allow for expansion and contraction of floor system.

ADA provisions: Floor to floor transitions cannot exceed ½" in elevation difference at the transition. Larger stepped transitions must be ramped at no greater than 1:10 (with handrails) to 1:20 (no handrails required)

Floor finish: Catalyzed polyurethane finish system requiring multiple sanding and application steps for a sanding sealer / primer base coat and two finish coats of gloss urethane. Floor striping is accomplished between the first and second finish coats.

Court striping: Painted striping, in the same epoxy system as the background wall finish, is necessary for the gypsum wall systems. Flooring striping is handled by the flooring manufacturer. Front and side wall striping is prefinished with resin core laminate panels, but must be painted onto the surface of unfinished resin core systems. Consult with a national racquetball association like USRA (United States Racquetball Association) for standards particular to competition in the project region.

SYSTEMS

Structured Activity

Plumbing

Water fountains: 1 per 150 patrons at peak time use.
Provide one drinking fountain near spectator area, but not necessarily directly adjacent to courts. It is undesirable for water to be available where it could be carried onto courts.

Electrically cooled unit recommended. Plan for, or locate fountains near a minimum (1) 110v, 20 amp circuit / outlet for either hardwired or plug-in.

Mechanical (HVAC)

Mechanical heating, ventilation, and humidity control of the module is mandatory. Air conditioning needs are determined by ACE regional guidelines.

Operating range: System able to maintain 60 - 68 degrees (F) year-round at 50% or less relative humidity.

Preliminary design criteria: (Adjust locally)
Summer: Outside temperature 78 deg. F, RH 50%.
Winter: 32 deg. F., RH 30%

Air changes: 8 -12 air changes per hour, negative pressure and 20CFM/person. Will be provided with CO_2 sensor.

Air movement / control: Fully ducted supply and return. Passive or plenum return not recommended.

Supply diffusers are to be heavy gauge fixed metal grilles with four-way air movement and blade-type vanes. Return air grilles may be perforated plate or blade type. All diffusers to be prefinished, designed to be impact resistant. Preferred location is back wall supply and return.

Temperature controls: Independent to courts, with all controls centrally located, solid state and programmable. Ability to control peak and off-peak temperatures with 24 hour or one-touch setback programming recommended.

Ductwork shall be insulated sheet metal rectangular or circular duct routed adjacent to diffuser locations. Use flexible duct drops to diffusers.

Natural (non-mechanically driven) ventilation: Not recommended.

Lighting

Direct, recessed HID, metal halide fixtures preferred. Six per court to aid in lighting distribution.

Lighting control: Centralized lighting control station within sight line of the court(s). Circuit grouping needs and/or preferences will be determined by circuit capacity.

No dimming required.

SYSTEMS

Structured Activity

Light Level

70 - 75 Foot-candles at the floor, minimum. Competition racquetball courts are typically specified at 100 foot-candles minimum, but special care must be taken to guard for glare conditions at walls and floors. Minimum calculated wall reflectance shall be .65. Finished walls can achieve .80 but must be verified with panel manufacturer.

Contribution of natural light via windows and/or skylighting is not recommended.

Power

No convenience outlets within the court system. Power for maintenance is to be provided in spectator / waiting area only, with close proximity to each court. Convenience power (general cleaning and service): 110v, 20 amp circuits. Spaced at 20'-0" o.c. minimum around the perimeter of the spectator / waiting area.

Specialized (equipment) power: 110v, 30 amp dedicated circuits for convertible court system if used.

Power requirements in this Technical Criteria manual are for CONUS installations. OCONUS power requirements should be addressed on a location by location basis.

Technology / AV

No technology requirements.

Sound

Sound system: Flush recessed ceiling speakers, 100 watt minimum output rating, capable of reproducing the entire audible range for human speech. Link speakers to paging system with input / output modes for single court or all court paging. Provide at least one speaker location in spectator / waiting area with court speaker at back upper wall.

Sound sources: Commercial amplifier, filtered for EM interference. Public Address / microphone station.

Locate sound equipment in a centralized control location. Typically provide a lockable, glass door vertical rack for mounting the A/V equipment.

Sound amplification requirements are determined by the combined sound source output and the desired reproduction sound level minus the acoustical performance rating of the space.

Optimum peak sound level is 40 to 50 db constant (at 1000hz minimum), during peak operation times. Sound transmission class (STC) rating of court walls is 53 or better.

SYSTEMS

Structured Activity

Communications

Paging function microphone and amplifier for court instruction from spectator area. Place amplifier within central line of sight in multi court installation or dedicate one court to instructional purpose.

Acoustical Performance

Courts are hard sound reflective surfaces. Control only for sound transmission from courts to other activities. Refer to wall construction guidelines in this module.

Windows & Doors

Glass back walls are preferred. See the guidelines for wall materials in this module.

Squash Court

The main difference in squash courts is the overall dimensions. Squash courts are 32'-0" long x 21'-0" wide x 20'-0" high clear inside dimensions For international doubles. Other forms of play require differing court sizes. Verify principal use during planning.

Court striping differs slightly from racquetball and the front wall construction differs by the addition of a "telltale." This is an angled metal strip mounted approximately 2'-0" above the court floor to indicated a low serve considered out of play.

Generally, squash courts should be constructed separately from racquetball courts. When the demand for squash courts equals racquetball participation, and space is limited, the Engineer should consider a convertible court system.

Convertible courts are able to move partitions to meet the dimensions of either racquetball or squash court use. The movement system is specialized and requires the use of a single subcontractor to supply the walls, back wall, and hardware for the moving parts. Typically runners are provided in the floor for the back wall, and rollers provided on the base of the side walls. A continuous wood floor system is provided. The overall system occupies 4'-0" additional floor space in width than a standard racquetball or squash court fixed assembly.

EQUIPMENT

Fixed and Loose Equipment

Structured Activity

"Goody box:" It is highly recommended that a place for the storage of small valuables during play be provided for each court. Court manufacturers offer, as an option, a recessed metal box with flush cover and concealed fasteners, accessible from the interior side of the court only. It is recommended that at least one valuables box be provided per court.

Spectator bench: Provide one 5' long bench per court for waiting / spectator use. Bench is recommended to be provided in solid wood "butcher block" style top 1 -1/2" thick, on laminate covered pedestals with rubber base shoes. Benches should be permanently mounted to the floor.

ADA (American's with Disabilities Act) General provisions:

All equipment accessible to disable patrons shall have a clear approach of no less than 36" wide.

All aisles in spectator area shall be no less than 36" in clear width. 48" is preferred.

All drinking fountains and accessible features designed for public use shall offer a clear approach of no less than 36" x 36", and be mounted at a height of no greater than 54" and no less than 48."

Priority shall be placed on effective access by disabled patrons and not based solely on minimum access guidelines published by the ADA.

Calculation

Sauna, Lockers, Showers and Toilets

An estimation of program area need for User Support is based on a projected peak occupancy rate. The peak rate is based on an assumed percentage of occupied stations in each module. The demographic profile of the user group is assumed to be 65% men and 35% Women.

PEAK OCCUPANCY TABLE	X-small	Small	Medium	Large	Incremt.
Fitness - Cardio	10	21	47	78	31
Fitness - Circuit	7	16	23	46	23
Fitness - Free Wt Area	13	28	46	61	38
Exercise - Aerobic/Large	24	32	56	88	46
Exercise - Non	8	10	13	20	10
Structured - Racquetball	4	4	4	8	4
Other Structured	12	12	18	20	12
Gymnasium	15	30	45	60	15
Jogging Track	48	66	102	150	0
TOTAL	**141**	**219**	**354**	**531**	**179**
MEN (65%)	**92**	**142**	**230**	**345**	**116**
FEMALE (35%)	**49**	**77**	**124**	**186**	**63**
Toilets (1 per 30 Men)	3	5	8	12	4
Toilets (1 per 20 Women)	2	4	6	9	3
SUBTOTAL TOILETS	5	9	14	21	7
Toilet Space @ 15 sf	**75sf**	**135sf**	**210sf**	**315sf**	**105sf**
Circulation @ 15 sf	**75sf**	**135sf**	**210sf**	**315sf**	**105sf**
LAV (1 per 30 men)	3	5	8	12	4
LAV (1 per 25 female)	2	3	5	7	3
SUBTOTAL LAV	5	8	13	19	6
LAV Space @ 6 sf	**30sf**	**48sf**	**78sf**	**114sf**	**36sf**
Circulation @ 12 sf	**60sf**	**96sf**	**156sf**	**228sf**	**72sf**
Lockers:					
Men (1.6/participant)	147	228	368	552	186
Women (1.6/participant)	79	123	198	297	100
SUBTOTAL LOCKERS	226	350	566	850	286
Size: 18"x18"x60" @ 8 sf	1,805sf	2,803sf	4,531sf	6,797sf	2,291sf
At 75% (50% 1/2, 50% full)	**1,354sf**	**2,102sf**	**3,398sf**	**5,098sf**	**1,718sf**
Shower-Men	6	9	15	23	8
Shower-Women	4	6	10	15	5
SUBTOTAL SHOWERS	10	16	26	38	13
Shower Space @ 10 sf	**102sf**	**159sf**	**257sf**	**385sf**	**130sf**
Circulation @ 15 sf	**153sf**	**238sf**	**385sf**	**577sf**	**195sf**
SUBTOTAL	**1,849sf**	**2,913sf**	**4,694sf**	**7,032sf**	**2,361sf**
Circulation /Sauna (20%)	**370sf**	**583sf**	**939sf**	**1,406sf**	**472sf**
ESTIMATED AREA	**2,219sf**	**3,496sf**	**5,633sf**	**8,438sf**	**2,833sf**

MODULE

Lockers, Showers, Toilet

Overall Program Area

X-Small	**2,400 SF**	**All areas rounded up from calculation on previous page.**
Small	**3,800 SF**	
Medium	**5,850 SF**	**Increment area is estimated to be 3,000 SF**
Large	**8,800 SF**	

Function / Description

Support space to facilitate changing before and after recreational activities. Half and full lockers are provided in each locker room. Showers are programmed to provide individual cubicles with dressing compartments.

Direct Adjacencies

Main corridor system and major activity components such as Fitness and Gymnasium

Indirect Adjacencies

Building entrance

Ceiling Height

Locker Rooms: 8'-0" minimum with 9'-0" preferred
Toilet Rooms: 8'-0" minimum with 9'-0" preferred
Shower/Drying: 8'-0" minimum

Material Definition

"Wet areas" are defined as rooms where direct contact at walls and floors with water is expected. This includes showers, drying areas, and toilet / grooming areas directly adjacent to the showers. Wet areas may be considered "humid" space.

"Humid" is defined as above 60% relative humidity during typical room function over the entire period of normal hours of operation. Humid areas include locker rooms adjacent to showers and toilet rooms open to shower areas. Humidity varies by degree with "high" humidity occurring only in areas with continuous open water sources such as whirlpools, steam rooms, and swimming pool areas.

MATERIALS & FINISHES

Ceiling Finishes

Lockers, Showers, Toilet

General provisions: Highly light reflective and sound absorbent materials for locker areas. Provide 2'x 4' or 2'x 2' lay-in, wet-formed mineral fiber acoustical panels, on "humid" rated "T" shaped pre-finished metallic grid system. 15/16" or 9/16" wide "T" grids are preferred.

Face design: Non-directional fissured face designs are preferred to reduce installation cost and waste.

Edge design: "Flush" (square edges).

Impact resistance: standard durability rating.

Sound absorption for acoustical panels: No less than .55NRC for standard tiles, .70 for film or ceramic faced units.

Surface light reflectance: No less than .80. To improve lighting distribution within the room, use standard manufacturer's white color. Increase lighting output with off-white colors and/or panels with less than .80 light reflectance. Refer to lighting guidelines.

Locker Room - Humidity and mold resistance: Manufacturers offer both "plastic" film faced units, ceramic, and painted finishes for humidity and mold control. Most standard tiles are "non-sag" but not mold resistant. Units should be treated for low moisture absorption and mold formation. The most expensive (high humidity resistant) to least expensive (adequate humidity resistance) ceiling tile options are: 1)Aluminum grid with ceramic faced tiles, rated for wet (pools) conditions. Use with extreme peak load activities and constant humidity (100%) produced by existing, deficient air handling systems or constant shower activity. 2)Factory applied paint finish for steel grids rated for "humid" conditions with ceramic faced "high humidity" tiles or "high humidity," unfaced tiles. Recommended as best cost to benefit ratio. 3)Factory applied paint finish for steel grid with "humid" rated tiles. Lower initial cost offset by higher maintenance costs.

Fire resistance: Use only Class A rated materials as determined by Underwriters Laboratories (UL). Provide fire resistive system components where ceiling-floor assembly contributes to the fire protection of habitable space on floor(s) above the module.

Seismic requirements: Provide sway bracing for ceiling grids installed in seismic zones where local building codes would normally require additional protection from fall-out of panels and lighting.

Overstock: Request a minimum of 2% overstock for future replacement.

Toilet and Shower - Humidity and mold resistance: Provide veneer plaster finish on gypsum board or true plaster on mesh lath or plaster base (board) ceilings in shower rooms. Toilet rooms can use painted, suspended gypsum board ceilings. Where shower / toilet room combinations exist, use plaster finished ceilings of either type. Epoxy paint system typical throughout. Use dropped soffits or false gypsum board beams between toilet / shower areas and locker rooms. This will divide ceiling systems and provide a barrier, at the ceiling line, for odor and moisture confinement to the higher humidity areas.

MATERIALS & FINISHES

Wall Materials

Lockers, Showers, Toilet

Standard concrete masonry block or metal studs and gypsum board wall with ceramic tile finish.

Critical item: Provide a gypsum wall board product ("tile backer board") specifically designed for ceramic tile installation where wall tile will occur. Preferred product in shower areas is "cement" (gypsum- cement composition) board versus a paper faced tile backer product.

Ceramic tile: should be full height in showers, behind toilets and urinals (as per most health codes), and as a 4' high wainscot throughout the room(s). If initial cost outlay is a factor, "full" height ceramic tile may be defined as 6' - 8' above the finished floor at toilets, full height at showers and deleted elsewhere in order to save initial costs. Expect yearly maintenance to paint walls in wet areas however. Engineer shall balance durability, health code requirements, and maintenance against initial cost. Partial height ceramic tile or fiberglass panels in shower units are not recommended.

Water resistant gypsum board on steel studs may be used behind lockers and above ceramic tile wainscots. Epoxy paint system is recommended for optimum moisture and stain resistance. Freestanding column covers may be CMU or gypsum board on metal studs with ceramic tile wainscots to 4'-0."

Tile sizes and design: Typically use a 4" x 4" tile with "cushioned" edge. 1 ½ x 4" special trim pieces may be used to cap wainscots and ½" x 3 ½" tile strips may be added as accent stripes or bands within larger plain fields of tile. Consider creating a pattern of accent tiles or trims in complimentary colors to improve visual appearance. Avoid using darker colors as the main background color.

Color / Price: Ceramic tiles are priced by quality of manufacturer and by color. High quality tiles suitable for commercial / recreation use are manufactured by most nationally recognized U.S. manufacturers. All such companies use color codes 1 through 4 to denote color ranges and cost. Deeper, richer colors (3 and 4 class colors) are more expensive than more common white, off white and tan tiles (1 to 2 class colors). Hand painted or special texture tiles are their own class and must be priced separately. Balance tile color, need for accents or special shapes versus square footage when attempting to control the finish price of ceramic tile.

Use gloss finish tiles. Flat or "natural" finish wall tile are not recommended for wet use areas or toilet rooms. See below for tile floor finishes.

Special shapes: Use bullnose edge tiles at all outside corners. Use coved base tiles to match wall or floor system. Do not use wood base. Do not use rubber or vinyl base in wet areas.

MATERIALS & FINISHES

Wall Finishes

Lockers, Showers, Toilet

Ceramic wall tile: See notes above. (if existing, must be in good condition)

Standard concrete block: Water based or catalyzed polyester epoxy coating, semi-gloss. Apply a heavy acrylic block filler spray applied and backrolled to a pinhole free surface, and two epoxy finish coats of 5 to 6 mil Dry Film Thickness (DFT).

Gypsum board (when used): Water based epoxy, semi-gloss finish. Apply one coat compatible primer with two finish coats of 5 to 6 mils. DFT.

Ferrous metals (window and door frames): water based epoxy minimum. Apply one coat primer compatible with finish coat, and as barrier coat to factory primer. Two finish coats of 5 to 6 mils. DFT.

Where metals are used, specify corrosion resistant materials (aluminum or stainless steel). Where ferrous metals are unavoidable, specify factory enamel coated finishes. Field painting of any metallic items, with the exception of door or window frames, is strongly discouraged in this module.

Flooring

Locker rooms:
Substrates: Concrete.

Material: Solution dyed, level loop nylon carpet, with microbial treatment for resistance to mold and mildew.

Minimum specifications: 26 oz yarn weight, 45-60 oz finished weight with woven polypropylene backing. 5/64 gauge minimum. 10 year wear / abrasion warranty. Minimum pile height .166" to .1875"

Transitions: Metal edge transitions between thin set tile and carpet. Marble transitions to mud set tile floors.

Shower and toilet rooms:
Substrates: Where possible, provide a min. 4" thick, level concrete slab on grade over properly graded crushed stone sub-base, with a 10 mil polyethylene sheet vapor barrier located directly between the slab and the subbase.

Where floor is above grade, expect to apply a waterproof membrane over suspended concrete floors, prior to installing floor tile. Run membrane up walls minimum of 4" to form continuous barrier.

MATERIALS & FINISHES

Flooring (continued)

Lockers, Showers, Toilet

Shower and toilet rooms (continued):

Floor tolerances: No more than ¼" in 10'-0" each direction, non-averaged for the full length of the floor. Follow flooring supplier's recommendations for filler and surface priming materials compatible with the anticipated mortars and adhesives

Material: Ceramic mosaic tile (in good condition if existing). Mud set witl floors sloped to drain.

Type: 2" x 2" preferred.
Installation: Mud set recommended for new construction. Slope to drain in showers (located one per cubicle), keep flat in toilet rooms with slight depression around floor drains. Thin set latex - epoxy adhesive also acceptable for retrofit and floors above grade when used with waterproof membrane. Thin set latex- portland cement recommended for concrete subfloors only. Shower drains centrally located, one per cubicle. Overall floor slope should not exceed 1/2" in 10'-0".

Finish: Wet and dry skid resistance is the priority. Non-glazed mosaic tiles for floor use are typically provided with a roughened face texture. Verify texture of tile prior to approval. Natural (flat) finish tile may also be satisfactory. Minimum 1/8" thick.

Note: Flooring height in excess of 3/8" may require special transitions to avoid access conflicts with the Americans with Disabilities Act. See "ADA' comment below.

Floor Edge treatments: Use flooring manufacturers' coved base trim piece at wall to floor joints. Avoid use of rubber base. Typically use marble thresholds to accommodate the difference in floor thicknesses between mud set tile floors and adjacent corridors or carpeted locker areas. Mud set tile floors are typically 1 1/4" finished thickness.

Other transitions: Metal edge trims may be used with thin-set tile to carpe transitions.

ADA provisions: Floor to floor transitions cannot exceed ½" in elevation difference at any transition. Larger stepped transitions must be ramped at nc greater than 1:10 (with handrails) to 1:20 (no handrails required)

SYSTEMS

Plumbing

Lockers, Showers, Toilet

Plan on grouping toilets and urinals. Whenever possible, provide back to back toilet walls dividing mens' and womens' facilities. Lavatories should be on a separate wall, but grouped together in one counter assembly. Locker rooms and wet areas should be separated by a full-height barrier.

Lavatories: See plumbing calculations. Recommend no less than two lavatories per toilet room in any size recreation facility.

Provide three lavatories minimum in continuous counter mounted application. Mount counter height to ADA maximum. Lever arm or wrist blade faucet handles.

Faucets: Lavatories and showers should all accommodate handicapped users with lever handle faucet controls. Automatic sensor activation preferred.

Toilets: See plumbing calculations to determine fixture count. No less than two toilets with two urinals or three toilets for women in any size facility. In Men's rooms provide a ratio of 1/3 urinals to toilets required. Automatic sensor flush preferred.

Floor drains: Expect to provide one drain per shower, and one floor drain per 250 square feet of floor area. Typically, one drain centered near toilet / urinal wall is adequate for unexpected overflows.

Mechanical (HVAC)

Mechanical heating, ventilation, and humidity control of the module is mandatory. Air conditioning needs are determined by ACE regional guidelines. Operating range: System able to maintain 70 - 78 degrees (F) year-round at 50% relative humidity or less.

Preliminary design criteria: (Adjust locally)
Summer: Outside temperature 78 deg. F, RH 50%.
Winter: 32 deg. F., RH 30%
Air changes wet areas: 20-30 air changes per hour, negative pressure.
Air changes dry areas: (<50% RH) 8-12 air changes per hour, negative pressure and 0.50 CFM/ft_2.

Temperature controls: Independent to room, solid state and programmable. Ability to control peak and off-peak temperatures with 24 hour or one-touch setback programming recommended.
Air movement / control: Fully ducted supply and return. Dedicated supplemental exhaust for toilets Passive or plenum return not recommended. Supply diffusers are to be adjustable metal grilles with four-way air movement and blade-type vanes. Return air grilles may be perforated plate or blade type. All diffusers to be pre-finished.

Ductwork shall be insulated sheet metal rectangular or circular duct routed adjacent to diffuser locations. Use flexible duct drops to diffusers.
Natural (non-mechanically driven) ventilation: Not recommended.

SYSTEMS

Lighting

Lockers, Showers, Toilet

Lighting Design:
Locker areas: 2 x 4 lay-in fluorescent lighting with prismatic lens. Priority is 40 to 50fc evenly distributed for seeing into lockers. Locate lighting before deciding on ceiling tile pattern.

Shower / toilet areas: Avoid centering light sources outside toilet stalls and directly behind patrons at mirrored surfaces. Take into account viewing angles from mirrors to light sources to avoid reflected glare. Use linear fluorescent tubes recessed into ceilings arranged as a a row of light sources along the back wall of toilets and directly over lavatory / grooming counters. Use prefabricated 1 x 4' linear fixtures or create custom length, 12"- 18" deep recessed light troughs within gypsum board or plaster ceilings. Conceal tubes with plastic or metallic finish "eggcrate" grille material (½" x ½" plastic grid.) Standard suspended ceiling edge trim can be used for supporting the grille. See also Toilet Room accessories below.

Shower stall lighting: Recessed P-lamp fluorescent fixtures with sealed lenses, rated for wet applications.

Lighting Requirements: Direct recessed fluorescent lighting in linear configurations are preferred. Supplement with round recessed fluorescent (PL lamp) down-lighting to overcome shadows from obstructions or to highlight certain areas. Low ceiling areas may require sealed downlighting to supplement light levels. (i.e. in shower compartments)

Lighting types: 2' x 4' recessed fluorescent with prismatic lens for general illumination. 1 x 4 or recessed lighting troughs with strip two tube fluorescent fixtures concealed by eggcrate grilles.

Locations: Lights are located based on the output of the fixture, distribution pattern of the fixture at the anticipated ceiling height, and desired overall light level (measured in footcandles) at the floor. See "Light level" guidelines. Recommendations of fixture spacing may be obtained from the selected fixture supplier or with the services of an illumination engineer.

For preliminary purposes, 2 tube 40w recessed 2 x 4 fixtures generally provide the required light level for the locker module. 1 fixture per 112 sq. feet. (8' x 14' area). Where continuous strips are placed use 2 x 4 4-tube (40w) recessed fixtures. Validate all fixture spacings with the manufacturer.

Lighting control: Use of occupancy sensors to activate lighting by motion detection, is recommended. Independent slide or toggle controls may also be used to control fixtures by groups. Grouping needs and/or preferences will be determined by circuit capacity.

No dimming required.

SYSTEMS

Lockers, Showers, Toilet

Light Level

50 footcandles at the floor, minimum. Provide even distribution for locker areas.

Additional contribution of natural light via windows and/or skylighting is highly recommended.

Power

GFIC protected outlets typical. Power requirements in this Technical Criteria manual are for CONUS installations. OCONUS power requirements should be addressed on a location by location basis.

Provide GFIC outlets at grooming counters.

Convenience power (general cleaning and service): 110v, 20 amp circuits. Spaced at 10'-0" o.c. minimum around the perimeter of the room in the locker base, and at freestanding columns located more than 10'-0" from the walls or the nearest outlet.

Technology / AV

Ceiling mounted speaker for public announcements.

Sound system: Flush recessed ceiling speakers, 60 watt minimum output rating, capable of reproducing human speech, minimum.

Sound

None required.

Communications

None required.

Acoustical Performance

No extraordinary sound reduction treatments are required. See individual material requirements.

Windows & Doors

Views into the space are prohibited. Aluminum or hollow metal frames are recommended. Tempered glass should be typical to the module.

Miscellaneous

ADA (American's with Disabilities Act) General provisions:
All toilet accessories or plumbing fixtures accessible to disable patrons shall have a clear approach of no less than 36" wide by 48" deep when measured from the edge of counter or wall face.

All accessible features designed for public use shall offer a clear approach of no less than 36" x 36", and be mounted at a height of no greater than 54" and no less than 48."

Priority shall be placed on effective use of equipment by disabled patrons and not based solely on minimum access guidelines published by the ADA.

EQUIPMENT

Equipment Criteria

Lockers, Showers, Toilet

Provide enameled steel or solid phenolic lockers in single or double tier. Sizes: Locker sizes for recreation use are typically 15" wide x 15" deep x 60" or 72" tall for single tier, and same dimensions at 36" tall in "Z" configuration for double tier. Where needed, recommend 18"- 24" deep lockers so that hangers will fit front to back. Contact manufacturers to verify clearances. Use heavy duty design with frames no less than .0598" thick enameled steel for metal lockers. 1/8" Wall thickness in phenolic lockers is minimum for heavy duty.

Layout: Provide single tier lockers with one shelf and three hooks. Mesh ventilation is optional. Unless long term storage of clothing is expected, ventilated lockers are not necessary, nor desired from a security standpoint. Lockers should be mounted on an 18" high permanent base of solid concrete or fully grouted concrete block. Upper shelves in 72" locker on an 18" base are difficult to reach from the floor for some patrons. See below for locker bench guidelines. Locker spacing is typically 6'-0" minimum to 8'-0" preferred between facing banks of lockers and benches. If floor mounted benches are used, locker spacing must increase to provide a minimum of 36" aisles between locker face and edge of bench. 48" aisle preferred. See notes below on advantages of cantilever mounted benches.

Provide a dropped gypsum board soffit over lockers along perimeter walls, or provide the manufacturers standard sloped top caps.

Hardware: Locking hardware for typical recreation use is padlock hasp with patron providing lock.

Shower / Drying Compartments: Showers will be individual compartments. Compartments may be fully tiled walls on standard construction, or fully tiled head walls with phenolic resin partitions mounted much like toilet partitions between shower stalls.

Sizes: Shower compartments shall be a minimum of a 3' x 3' shower, sloped to drain, with a 3'x 3' level floor drying compartment, divided by vinyl or cloth curtains. ADA requirements call for a 5'-0" wide x 3'-0" deep shower minimum for wheelchair access. It is typical to combine the -drying and showering space in an ADA accessible shower compartment. If desired, a small separate room with flush door may be provided.

Accessories: Make provisions for recessed soap dish and shelf for toiletries within shower compartment. In drying area , provide a partition mounted fold down bench. Provide a minimum of two robe hooks within drying area. Provide 2 - 60" high shower curtains, one in sufficient width to fill the space between drying and shower, and one between drying and public space. Provide a single, vertically mounted 36" long grab bar adjacent to spray head and faucets, on the side closest to the drying area. In ADA shower also provide a wall mounted fold down bench within the spray area of the shower head. Provide hand-held shower unit, capable of being mounted at 60" and 48" above finished floor. Provide an additional horizontally wall mounted 42" long grab bar on the side wall of the enclosure.

EQUIPMENT

Equipment Criteria (continued)

Lockers, Showers, Toilet

Toilet Room Accessories: The following represents typical accessories for shower / toilet / locker rooms. Assume 401 stainless steel construction with brushed finish unless otherwise noted:

Toilet partitions: Enameled steel, or solid phenolic floor mounted partitions (in good condition with operable doors if existing). Partitions may be ceiling hung for easier floor maintenance. Ceiling mount uses vertical rods to hang partitions, but not recommended to use rods alone when attachment point is more than 2'-0" above the top of partition. Taller ceiling plenums require a steel subframe engineered by partition manufacturer to reduce partition sway to a minimum.

Shower partitions: Solid Phenolic partitions are recommended for shower and drying cubicle dividers. See space planning guide for arrangement of shower and drying cubicle. Stainless steel hardware and partition trim only.

Dispensers:
Toilet paper dispensers: Stainless steel, back to back partition mounted double roll dispensers. Double roll surface mounted units for walls where recessing units is impractical. Semi-recessed or recessed dispenser units whenever possible.

Sanitary Napkin dispenser: Separate wall mounted unit outside toilet partition in central location. In the stall, provide a thru partition napkin disposal unit. Dispenser may be coin operated at Engineer's discretion.

Paper towel dispenser: Minimum 200 count C-fold unit. Surface mounted or semi-recessed. Provide 1 dispenser per three lavatories.

Soap dispensers: Under-counter mounted units with above counter pump spouts, preferred. Provide 1 per lavatory. If wall mounted, provide stainless steel housing for units, mechanically fastened to wall. No adhesive mounted applications. If possible, hold mirrors up above counter backsplash to allow mounting of dispenser without drilling of mirror. Verify that maximum reach from counter edge to dispenser does not exceed ADA requirements.

Waste disposal unit: Minimum 5 gallon capacity, semi-recessed. With key operated removable bin. Provide one unit per towel dispenser.
OR: Combination paper towel Provide 1 combination unit per 3 lavatories. Add units beyond Dispenser / waste disposal minimum count to overcome remote location from lavatories or Unit for added convenience.

Electric hand dryers: Wall mounted, 110v sensor operated unit with both hand and face directional air distribution. Provide 1 dryer per 3 lavatories.

Grab bars: 1- 1/4" min. diameter, stainless steel grab bars in lengths noted for each application. Provide with concealed fasteners and decorative mounting flanges. Provide bars with knurled grip area etched into the length of the bar.

EQUIPMENT

Equipment Criteria (continued)

Lockers, Showers, Toilet

Mirrors: Provide tempered mirror glass or polished metal mirrors. Recommend using counter to ceiling mirror equal to the width of lavatory and/or individual mirrors spaced evenly at grooming counters.

Architectural woodwork:
Solid surface counters: Solid surface lavatory and grooming counters with 4" high solid surface backsplash are preferred for durability and color selection. "Solid surface" refers to polymer fabrication of monolithic solid thermoset plastic. Common trade names are "Corian" or "Fountainhead." Available in a variety of patterns and colors. Counters are factory formed and all components are shipped precut to the site.

Use steel subframe to construct a cantilevered counter. This allows ADA access to lavatories, faucets, and soap dispensers without separate "handicapped" lavatory. Lavatory counter depth cannot exceed 24".

Grooming shelf set apart from lavatories is strongly recommended. The shelves are typically 18" deep with backsplash. Coordinate placement of 1 electrical outlet per 4' of shelf with no less than 2 per grooming area. Provide a mirrored wall surface above the counter. Shelf may be mounted as high as 48."

Mount stainless steel or porcelain sinks under counter or flush with counter using stainless steel mounting trim. Consider solid surface sinks adhesively bonded to countertop.

ADA provisions: Provide a minimum of 48"x 48" clear floor area in front at least one lavatory for wheelchair access.

Locker benches: Every locker bank requires a continuous 17 ½" high bench parallel to the locker faces. (Note: 18" high locker base allows for door to swing out over 17 ½" high bench) Bench width is to be a minimum of 18". Options for mounting are; floor mounted on steel pipe columns with pipe flanges bolted to the floor, or cantilever mounted to locker base assembly. Bench construction for recreation use is recommended as solid maple or oak bonded in "butcher block" style 1 1/2" - 2" thick in cross section. Natural polyurethane finish. Cantilever benches are preferred; mounted with galvanized steel tube brackets cast into the locker base. 4'-0" o.c. bracket spacing is typical. A cantilevered bench allows for more free area between lockers and ADA access. A bench is also used as a step for reach into taller lockers.

MODULE

Sauna

Overall Program Area

X-Small
Small
Medium
Large

SF areas for Saunas are included within the Lockers, Shower, Toilet area in the previous section.

Function / Description

General provisions: A sauna is a supplemental space within a larger recreational module. Guidelines for this module assume the presence of changing rooms and construction quality similar to the gymnasium module. Sauna rooms can take the form of:

1) a custom built space of any size with heating equipment and finishes designed specifically for that space,

2) a prefabricated assembly shipped broken down to the site and reassembled in place with all heating, lighting, controls, and accessories provided, or

3) a hybrid of a field constructed enclosure, utilities and controls, and specialized room finishes, purchased separately and installed on site.

The guidelines provided herein are suitable for building any of the three types listed above. Sauna kits to be in good condition.

Direct Adjacencies

Locker Room, Shower, Toilet

Indirect Adjacencies

Main Corridor System

Ceiling Height

8'-0" preferred.
Higher ceilings will require increase in heat output. Lower ceilings are too low for comfortable seating on upper bench tier.

Material Definition

Plaster veneer over gypsum / cement composition board.

Ceiling Finishes

Moderately light reflective, smooth trowel finish.

MATERIALS & FINISHES

Wall Materials

Sauna

Concrete masonry units (CMU). Moisture controlled Type 1, normal weight, hollow core.

Size and Face design: Plain 8 (high) x 16 (wide) x 8 (deep) units or "scored" with a vertical 3/8" false joint to appear as an 8 x 8 x 8 unit when placed in running or stack bond.

Compressive strength: 1900 psi minimum.

Bond: Running bond for load or non-load bearing partitions. Fully tooled joints.

Face finish: Manufacturer's standard finish

Special shapes: Use bullnose corner units at all outside corners.

Wall Finishes

The standard concrete block will have fully tooled joints but remain otherwise unfinished and concealed behind the sauna room interior veneer.

Sauna interior finish: ½" thick x nominal 4" wide natural finish redwood tongue and groove boards.

The veneer wall system should be placed over a 3 mil continuous sheet of polyethylene film to act as a vapor barrier and seal the room. The vapor barrier is attached to 1 ½" thick treated wood furring strips mounted to the block walls at 24"o.c. To insulate the sauna partition and reduce heat loss, in-fill the space between the furring strips with 1 ½" thick extruded polystyrene rigid insulation.

Ferrous metals: Do not use any ferrous metal products within the sauna interior. It is recommended that all fasteners and hardware to be stainless steel. Exceptions are noted below.

Doors and frames: Provide an aluminum entrance frame with an insulated aluminum door (i.e. as if for exterior use) with an insulated glass insert. If privacy is of greatest concern, a small insulated glass vision panel is still recommended to prevent accidental collision while entering or leaving the sauna. Preferred is a full insulated glass aluminum door in an aluminum frame. Do not use single pane glass in sauna doors.
Door handles shall be prefinished acrylic plastic. Critical item.
Powder coated factory paint finish.

MATERIALS & FINISHES

Flooring

Sauna

Substrates: 1 ½" recessed cast in place concrete slab is preferred. Wood subfloor is possible but not recommended without use of a waterproof membrane and cement board protection layer beneath sauna floor finish system. Note that water will be present in small amounts during normal function of the space.

Machine milled and formed ¾" thick minimum, solid redwood strip flooring mounted on cross aligned ¾" thick redwood sleepers. (Overall floor thickness of 1 ½."). Floor boards are visually run in a single direction in an open slat design with ¼" gaps between boards. Floor loose laid in 2' x 2' modules for easy removal for periodic maintenance / cleaning of the concrete substrate.

SYSTEMS

Sauna

Plumbing

No plumbing provisions for this module.

Mechanical (HVAC)

Outside mechanical heating and cooling is not applicable. Air movement is accomplished via passive ceiling and floor mounted vents, typically 24 square inches total for every 100 plan square feet, assuming 8'-0" ceiling height.

4 air changes per hour.
Temperature controls: Independent to room - Range 170 to l80 degrees F.
Relative humidity 5%. Controls accessible to staff only. Provide a panic button in sauna.

Lighting

Recessed downlighting, sealed and lens units rated for wet conditions. Gasketed trim ring where fixture flange penetrates ceiling.

Wall switch on exterior of room, no dimming capability.

Light Level

30 foot-candles at the floor.

SYSTEMS

Sauna

Power

220/240 single phase power necessary for heating unit. 110v circuit for room lighting. Power requirements in this Technical Criteria manual are for CONUS installations. OCONUS power requirements should be addressed on a location by location basis.

Technology / AV

None required.

Sound

None required.

Communications

None required.

Acoustical Performance

Windows & Doors

Equipment Criteria

Seating benches: Expect to provide continuous 24" deep x 18" high, two tier bench seating constructed from 2 x 4 solid redwood boards. Benches are generally arranged along two walls contiguous with one another. Redwood grade for benches is premium grade. Fully sanded and sealed. All edges of every board in the bench construction shall be eased and sanded smooth.

Sauna dry heat system: Estimate 1.7 KW per 100 square feet of sauna. Coordinate power with electrical provisions for the space. Factory wired timer for the heating unit is typically provided. Thermostatic and / or heat setting control is usually an option purchased with the equipment. Controls remote from heating unit housing will need to be coordinated in advance and wired by others during construction.

Provide a unit with a grated 30# or 60# (greater heat storage capacity) lava rock compartment
Sauna accessories: Provide water tub and ladle. Room temperature and humidity gauge, wall mounted. Optional towel or robe pegs, wall mounted.

ADA (American's with Disabilities Act) General provisions:
All accessible features designed for public use shall offer a clear approach of no less than 36" x 36", and be mounted at a height of no greater than 54" and no less than 48."

Provide level transitions between adjacent floor and sauna.
Provide one clear floor space of 48" x 48" directly in front of a bench for wheelchair accessible seating. Solid acrylic grab bars at handicap seating area are optional.

Priority shall be placed on effective use of equipment by disabled patrons and not based solely on minimum access guidelines published by the ADA.

MODULE

Miscellaneous Areas - Corridors

Overall Program Area

X-Small		**Corridor area provided in the**
Small		**Miscellaneous square foot allocation.**
Medium		
Large		

Function / Description

General building circulation serves to connect spaces visually as well as physically. Corridors should be broken into two main functions, central public axis and service corridors.

Direct Adjacencies

Central axis corridors for public use should connect to as many main modules as possible. Multiple axis corridors may be used to accomplish this. Service corridors are isolated by doors for security and privacy when possible, and connect loading and off-loading entries to mechanical rooms and main corridors.

Indirect Adjacencies

Ceiling Height

Public corridors :10'-0" and above with minimum 9'-0" to lowest ceiling element.

Service corridors: No less than 9'0"

Ceiling heights serve to identify main public corridors and may vary based on the width and visual axis desired within the facility. Gymnasium and Fitness modules utilize high ceilings and connecting corridors should take advantage of vertical views by use of tall interior window systems when possible. Generally, lobby and main corridor ceiling heights should match, with lower ceilings reserved for service corridors and corridors leading to auxiliary spaces serving the main module. If the corridor ceiling must be lower than the Lobby, then the transition between the lobby and corridor needs to be designed so that it is apparent that the corridor is the primary circulation path. No secondary corridor should be less than 9'-0" high.

Material Definition

N/A

Ceiling Finishes

Highly reflective and sound absorbent materials. Provide 2'x 2' or 2'x 4' lay-in, wet formed mineral fiber acoustical panels, on standard "T" shaped pre-finished metallic grid system. 15/16" or 9/16" wide "T" grids are base selection criteria. See optional considerations below.

Ceiling design: Public corridors are to follow level of finish and design utilized in the Lobby module. This includes continuation of dropped soffits or false beam patterns utilized in the Lobby module. Refer to design considerations in that module for more details. Service corridors out of public view and secondary corridors not visually connected to main corridor ceilings may reduce finishes to minimums.

MATERIALS & FINISHES

Ceiling Finishes (continued)

Miscellaneous Areas - Corridors

Material Specification & Lighting: Refer to Lobby module guidelines.

Special considerations: Main corridors will serve as routes for hidden utilities. Use accessible ceilings as much as possible. Avoid large areas of dropped gypsum ceilings as accents in corridors unless dedicate accessible paths for utility routing can be accommodated. Use of gypsum board decorative ceilings should take into account HVAC and plumbing valve, damper and control location above hard ceilings. These will require access doors to service these devices that will detract from the visual impact of the space.

Where service corridors will be opened to the outside air on a regular basis, use high humidity rated acoustical tiles.

Wall Materials

Concrete masonry units (CMU) are preferred. Refer to Lobby module for sizes and types in order for corridors to be compatible with level of finish. When gypsum board is used as a wall finish in corridors, it is preferred that two layers be applied to all walls for added impact resistance.

Wall Finishes

Follow the lobby module. Water based epoxy paints systems are mandatory for durability.

Flooring

Public corridors can extend the Lobby module finishes. Hard durable surfaces are preferred with carpeting to be restricted to secondary public corridors not subject to direct outdoor or wet area traffic. Carpet over wood substrates on above grade floors shall incorporate a dense, sound deadening padding no less than ¼" thick.

Service corridors: resilient tile preferred with clear or tinted sealed concrete as a minimum.

Modular floor mats are recommended at all outside entries leading to carpeted or resilient tile corridors. Avoid floor mats at loading and off-loading entries where heavy wheeled traffic is typical. If conflict with service access and carpeted corridors occurs, use floor mats with heavy duty load rating with lift out option for cleaning.

Substrates: Concrete on grade or suspended concrete preferred for durability and sound deadening characteristics. Properly prepared wood substrates to use tongue and groove plywood panels, mechanically fastened and glued to supporting structure.

SYSTEMS

Miscellaneous Areas - Corridors

Plumbing

A drinking fountain may be required along main corridors. When required, provide one electrically cooled two station unit, designed for

Mechanical (HVAC)

Outside air is not recommended. Utilize main corridors as ducted or plenum return air paths for connected modules. Direct supply in main public corridors is often not needed when corridors are open to a majority of modules. Service corridors may use ducted supply and return air systems.

Entries and entry vestibules: Supplement vestibule heat with recessed wall cabinets at floor line.

Operating range: System able to maintain 68 to 76 degrees (F) year round at 50% relative humidity.

8-12 air changes per hour pending transfer of air from other modules. Direct supply to follow same criteria as make-up air.

Temperature controls: None to thermostatically controlled VAV supply to make up air.

Lighting

Main corridors to b e combination of 1) recessed fluorescent down lighting (PL lamps) with pendant hung decorative lighting or pendant hung direct / indirect fluorescent fixtures. Decorative wall sconces are recommended to accent functions or highlight entry points to modules.

Secondary and service corridors to be lay-in 2' x 2' or 2' x 4' 4 tube (40W) fluorescent lay-in recessed or flush recessed fixtures in gypsum board ceilings.

Light Level

40 to 50 foot candles in Main Corridors
30 to 40 foot candles in secondary public corridors
50 foot candles in Service corridors

Power

220/240v single phase power for lighting.

240v single phase for cabinet unit heaters.

Convenience 110v outlets every 20'-0" staggered along both sides of corridors.

Technology / AV

Expect main conduit routing and data cable routing to take place in corridor ceilings.

SYSTEMS

Sound

Communications

Acoustical Performance

Windows & Doors

Equipment Criteria

Miscellaneous Areas - Corridors

Ceiling mounted voice quality only speakers every 24'-0" o.c. in Main Corridors for paging system, if used. Option to upgrade to music quality speakers if broadcasting of CD quality source is expected.

MODULE

Miscellaneous Areas - Building Support

Overall Program Area

X-Small		**Building Support area provided in the**
Small		**Miscellaneous square foot allocation**
Medium		
Large		

Function / Description

Miscellaneous Building Support areas include storage areas and mechanical / electrical / communications rooms or closets.

Direct Adjacencies

Miscellaneous areas support single or multiple activity modules. Mechanical spaces benefit from central locations to minimize ductwork runs, however adjacency to the outside is preferred for access and service of the equipment.

Data and telephone communication closets relate to mechanical spaces for main entry points to the facility only. Distribution points for data and phone network are preferred along corridors adjacent to the rooms they serve. Avoid placing data closets within recreational activity modules whenever possible.

Indirect Adjacencies

Ceiling Height

Mechanical rooms: 10'-0" minimum
Storage and communications closets: Open to structure, with varying heights.

Material Definition

N/A

Ceiling Finishes

None.

Open structure may be painted to increase light levels, but not recommended.

MATERIALS & FINISHES

Miscellaneous Areas - Building Support

Wall Materials

Concrete masonry units (CMU) are preferred in mechanical rooms and storage rooms where high abuse is expected.

Storage for non-recreation uses can be gypsum board over metal studs. Rubber base preferred, but not mandatory.

Wall Finishes

Water based epoxy paint for both CMU and gypsum board applications.

Flooring

Sealed concrete.

Office area closets in non-recreational areas may be carpet to match main area carpet. If wood substrates are used, resilient tile is preferred.

Plumbing

N/A

SYSTEMS

Miscellaneous Areas - Building Support

Mechanical (HVAC)

Direct supply is needed for data closets when switches and routers are present.
Operating range: System able to maintain 68 to 76 degrees (F) year round at 50% relative humidity.

Data closets: Prefer network equipment to be at 56 - 65 degrees (F) year round at 50% or less relative humidity. Circulation from corridor must be adequate to maintain minimum temperature requirements, or supplemental conditioned supply air must be available year round

8-12 air changes per hour pending transfer of air from corridors and rooms Direct supply to follow same criteria as make-up air.

Temperature controls: None. Heat rise sensor and alarm recommended for sensitive electronic equipment closets.

Lighting

Chain hung, 1' x 4' open tube fluorescent lighting fixtures. If gypsum ceiling used, surface mounted full enclosure 1' x 4' fluorescent fixtures

Lighting locations in mechanical rooms determined by location of HVAC equipment. Locate lights to maximum effect for service of equipment and safe circulation through the room.

Light Level

30 foot candles at floor minimum, 40 foot candles preferred.

Power

220/240v single phase power for lighting.

Convenience 110v dedicated outlets for routing equipment in data closets.

Convenience 110v outlets periodically throughout mechanical space for use with general tool or cleanup use. One dedicated 110v outlet at near entry to room for control PC to be used with HVAC temperature controls system for new equipment.

Technology / AV

One (1) available CAT5 data port and telephone line for HVAC controls service.

Sound

N/A

Communications

SYSTEMS

Acoustical Performance

Windows & Doors

Equipment Criteria

Miscellaneous Areas - Building Support

Walls shall be rated to 55STC or better for mechanical spaces adjacent to office, conference, or seating area functions. Walls shall be full height and sealed at top against noise transfer.

All HVAC equipment shall be sound isolated with spring mounted and acoustically designed support points. Concrete equipment pads shall be provided for all equipment, in particular where mechanical rooms on suspended slabs and over habitable space.

Louver panels at bottom of doors to data closets with powered networking equipment.

MODULE

Miscellaneous Areas - Offices

Overall Program Area

X-Small _____ **Office areas provided in the Miscellaneous**
Small _____ **square foot allocation.**
Medium _____
Large _____

Function / Description

Administration space for facility director or staff.
This function usually contains the following:

1) Director's Office
2) Staff Office(s)
3) Conference Room
4) Work Room Area

Direct Adjacencies

Offices may be decentralized and directly connected to the modules they serve or centralized with individual offices connected to an open office core for shared administrative services. When centralized, offices should be located near the main entry and accessed from the main circulation path. When decentralized, it is beneficial to locate offices along main circulation path(s).

Indirect Adjacencies

Ceiling Height

9'-0" minimum, with 9'-6" preferred.

Material Definition

N/A

Ceiling Finishes

Highly reflective and sound absorbent materials. Provide 2'x 2' or 2'x 4'lay-in, wet formed mineral fiber acoustical panels, on standard "T" shaped pre-finished metallic grid system. 15/16" or 9/16" wide "T" grids are base selection criteria. See optional considerations below.

Avoid solid gypsum board ceilings. Perimeter soffits are acceptable. Maintain access above ceilings for HVAC maintenance and future data network upgrades.

Face design: Random fissured, non-directional face design preferred. Main offices or conference / office space may benefit from continuing a textured or decorative face tile from centralized office entry points in an office suite.

Edge design: "Flush" (square edged) or "tegular" (routed edges)

Impact resistance: Standard durability rating.

Sound absorption: No less than .55 NRC

Surface light reflectance: No less than .80

Humidity: No special protections.

MATERIALS & FINISHES

Ceiling Finishes (continued)

Miscellaneous Areas - Offices

Fire resistance: Only Class A materials (UL rating). Provide fire resistive ceiling system where floor-ceiling assembly contributes to the fire protection of the roof-floor of the module.

Material specifications and lighting: 2' x 4' lay-in recessed fluorescent fixtures with prismatic lenses, mounted in the ceiling grid are minimum. 2' x 2' recessed fluorescent fixtures are preferred. Flush edge lens frames are minimum; chamfered lens frames preferred.

Add recessed fluorescent downlighting for accent effects in main office or waiting spaces to office suites.

Lay-in lighting fixtures are sold with integral HVAC diffusers in a slot arrangement on the fixture frame. These fixture types do not provide a good distribution of air and tend to increased air noise.

Seismic requirements: Provide sway bracing for ceiling grids in seismic zones where local building codes would normally require such protection.

Wall Materials

Gypsum board over metal studs is minimum and preferred material. When gypsum board is used as a wall finish in internal suite corridors, it is preferred that two layers be applied to all walls for added impact resistance.

Wall Finishes

Acrylic latex paint with "eggshell" finish is minimum. In offices off of more active modules, water based epoxy paints systems are preferred for durability, but sheen control is limited with epoxies to semi-gloss. In office suites and waiting areas, the durability of epoxies may be weighed against the less institutional look of eggshell latexes.

Flooring

Carpet is principle material for centralized office suites. Roll goods preferred, the minimum is commercial, solution dyed nylon in 26 oz yarn weight, 45 oz total finished weight. Provide carpet with static control. Increasing total finished weight closer to 60oz is preferred. Same level of durability as designed into Lobby or corridors if carpet is used.

Decentralized offices must consider continuing the predominant floor finish in their module. Guideline is to maintain a equal level of durability as the module flooring. Wet areas require tile flooring or sealed concrete as a minimum.

Storage, and data closets serving office suites are resilient tile preferred with clear or tinted sealed concrete as a minimum. Janitor closets shall be sealed concrete minimum and preferred.

SYSTEMS

Miscellaneous Areas - Offices

Plumbing

None usually required. In centralized office suites, one hand sink is typical, located in a shared work space or room.

Mechanical (HVAC)

Outside air is not recommended. Air movement should be controlled with ducted supply to each office. Variable air volume (VAV) devices are recommended for thermostatically controlling individual offices. Office temperature controls may be centralized as a minimum, with individual controls preferred.

Utilize main corridors as ducted or plenum return air paths for office suites

Provide acoustically lined ducts when routing ducts across several grouped offices.

For sound transfer control between offices, always maintain at least two elbow turns in hard ductwork prior to connecting the main duct run to a flex duct to ceiling diffusers.

Operating range: System able to maintain 68 to 76 degrees (F) year round at 50% relative humidity.

8-10 air changes per hour

Temperature controls: None to thermostatically controlled VAV supply.

Lighting

Lay-in 2' x 2' or 2' x 4' 4 tube (40W) fluorescent lay-in recessed, with "cool white" lamping preferred. Provide switch to each office.

Light Level

40 to 50 foot candles.

Power

Convenience 110v outlets, one per wall minimum, with 2 located along desk wall.

Technology / AV

Data and telephone cable routed to adjacent to convenience outlets, on desk wall if identifiable at time of design. See furniture considerations below.

Competitive sports or training may require the use of video taping to gauge performance. Offices for fitness directors may benefit from a TV and VCR bracket mounted 72' a.f.f. for the purpose of reviewing video tapes.

SYSTEMS

Sound

Acoustical Performance

Windows & Doors

Equipment Criteria

Miscellaneous Areas - Offices

None. Avoid extending paging systems into offices or office suites.

Office walls should maintain an STC (sound transmission class) rating of 45 or better to ensure a minimum level of privacy. This can be achieved typically with a single layer of gypsum board on each side of a metal stud wall extended fully to floor-roof deck above.

If less sound transfer is of primary concern, add 2" thick sound batting to dividing walls in sensitive offices. One additional layer of gypsum board on the room side one is seeking to protect will increase the STC rating to 50-53. Monitor and seal all tops of walls, duct, and pipe penetrations through walls. Sound insulate toilet and roof drain piping in walls shared with offices.

Furniture Considerations: It is preferred that offices are designed in anticipation of a particular grouping of furniture . A standard 2'-6" x 5'0" writing counter or desk with adjacent 4'-0" counter for computer use. One 6' high x 4' wide book case or cases. One desk chair and one visitor chair. Once satisfied with a basic arrangement, then power and data ports can be located with greater confidence.

MODULE

Miscellaneous Areas - Laundry / Issue

Overall Program Area

X-Small		**Laundry / Issue area provided in the**
Small		**Miscellaneous square foot allocation.**
Medium		
Large		

Function / Description

Cleaning and distribution of linens and/or sports gear used in modules.

Direct Adjacencies

Laundry may need to be in close proximity to the Control Area depending upon staffing levels and anticipated usage. Laundry / issue rooms should be located central to most modules with preference given to the fitness module. A connection to a service corridor and one outside wall is also preferred. Commercial dryers are preferred with a vertical exhaust duct through the roof. Alternatively, provide a short exhaust duct to an outside wall.

Indirect Adjacencies

Ceiling Height

9'-0" minimum, with 10'-0" preferred.

Ceiling Finishes

Highly reflective and moisture resistant materials. Provide 2'x 2' or 2'x 4'lay-in, wet formed mineral fiber acoustical panels, on phosphatized or otherwise humidity controlled "T" shaped pre-finished metallic grid system. 15/16" or 9/16" wide "T" grids are base selection criteria.

Face design: Random fissured, non-directional face ceramic frit (film faced tile) is minimum and preferred.

Edge design: "Flush" (square) edge. Avoid textured surface tiles or expending resources on decorative tiles. Laundry issue rooms will require flat, cleanable tiles to maintain their appearance.

Impact resistance: Standard durability rating. High impact resistance preferred.

Sound absorption: No less than .55 NRC

Surface light reflectance: No less than .80

Humidity: Non-sag, humidity controlled tiles.

Fire resistance: Only Class A materials (UL rating). Provide fire resistive ceiling system where floor-ceiling assembly contributes to the fire protection of the roof-floor of the module.

MATERIALS & FINISHES

Ceiling Finishes (continued)

Miscellaneous Areas - Laundry / Issue

Material specifications and lighting: 2' x 4' lay-in recessed fluorescent fixtures with prismatic lenses, mounted in the ceiling grid are minimum. Fixture to be rated for damp conditions.

Seismic requirements: Provide sway bracing for ceiling grids in seismic zones where local building codes would normally require such protections.

Wall Materials

Concrete masonry units (CMU). Moisture controlled Type 1 hollow core units are recommended. Standard block face.

Size and face design: Plain 8 (high) x 16 (wide) by 8" (deep) units.

Compressive strength: 1900 psi minimum.

Bond: Running bond.

Special shapes: Use bullnose units at all outside corners

Wall Finishes

Water based epoxy paints are minimum for durability.

Ferrous metals: (Window and door frames) Water based epoxy.

Flooring

Sealed concrete floors preferred. Provide 4" raised concrete platforms for washers and dryers.

Plumbing

Provide one exposed hot and cold water manifold with taps at each machine, to serve washing machines. Provide one individual floor drain for each machine, located to the back right corner. Manifold and drains should fall within a 2'0" alleyway created behind any bank of machines. Pipe manifold shall be 36" high at individual taps. Insulate all cold and hot water lines.

SYSTEMS

Miscellaneous Areas - Laundry / Issue

Mechanical (HVAC)

Outside air is not recommend. Air movement should be controlled with ducted supply and make up air balanced against dryer exhaust. Variable air volume (VAV) devices are recommended for thermostatic control. Ducted return air.

Dryer exhaust ducts will impact headroom clearances if dryers are not located directly on an outside wall. Size dryer equipment as early in the design process as possible. Locate or group dryer ducting and plan for an exhaust route to the outside when locating space.

If gas operated dryers are used, path for vertical flues shall be provided.

Operating range: System able to maintain 68 to 76 degrees (F) year round at 50% relative humidity.

10-12 air changes per hour. Gauge waste heat from commercial washers and dryers.

Temperature controls: Thermostatically controlled VAV supply.

Lighting

Lay-in 2' x 2' or 2' x 4' 4 tube (40W) fluorescent lay-in recessed, with "cool white" lamping preferred. Damp rated fixtures. Provide wall switch. Locate at least one fixture close to pass through counter. See architectural woodwork considerations below.

When wall cabinets are used over folding/sorting counters, provide under cabinet lighting consisting of 6" x 24 to 48" long, 1" high fluorescent units with opal or prismatic lenses, switched to the main room lighting.

Light Level

40 to 50 foot candles.

Power

Convenience 110v outlets, one per 20' of wall minimum.

Dryer power considerations can vary with equipment selected. Minimum plan for 30 to 60 amp 220/240v three prong twist connect outlets, one per dryer. Dryer and washer banks require one main disconnect per equipment bank, accessible from within the room and not located behind any equipment.

Electric operation of dryers is preferred, but accommodation for gas heat operated commercial dryers may be considered, but not recommended.

Technology / AV

One data and telephone port adjacent to convenience outlet at issue counter.

SYSTEMS

Miscellaneous Areas - Laundry / Issue

Sound

None. Avoid extending paging systems into Laundry rooms.

Communications

Acoustical Performance

Guard against sound transfer to adjacent modules with full height walls minimum.

Windows & Doors

Equipment Criteria

As a planning guideline, provide one 30 lb commercial washer and dryer for every 10,000 square feet of Fitness module for small facilities. Once 3 washers and dryers are reached, add one additional washer and dryer for every 20,000 additional square feet. Preferred: for every two washers provide three dryers. Increase capacity to 50lb and 80lb washers/ dryers for medium to large facilities respectively.

Architectural woodwork: Each laundry / issue space should be provided with a roll-up counter door, minimum 6'-0" wide with balanced manual operation minimum, electrically operated preferred. Counters serving the patrons shall be ADA compliant at no higher than 2'-10" and be at least 3'-0" deep.

Provide below counter cabinets and open cube shelving for storage of sports equipment and/or linens. Wall cabinets can be used but not preferred. Typical open linen cube is a two tier stacked arrangement 18" wide by 17" high by 18" deep typically located under a countertop for folding/sorting. Two cubes stacked for linens should be available for each hour of operation, minimum, up to a maximum of 24 cubes total for large facilities.

Provide 6'-0" feet of 2'-10" high, by 24" deep closed cabinetry with a countertop for storage of loose sports equipment. Wall cabinets may also be used. Provide at least two drawers for item identification labeling tools and supplies. If wall cabinets are used, provide under cabinet lighting for counter.

Provide 12'-0" minimum of folding and equipment handling counter adjacent to the issue counter. As much folding and sorting counter as can be effectively utilized within the space is preferred.

Both counter and shelving shall be .050 heavy duty plastic laminate with melamine cabinet interiors.

Provide alleys between cabinets no less than 48" wide for single bank of cabinets for ADA use, and 60" for double banks of cabinets opposite one another. Provide adequate room within the space for a 60" diameter turnaround by disabled staff, equipped with wheelchairs.

V Appendix

DEMAND-BASED STUDY OF CRITICAL FUNCTION MODULES

A study of utilization for each CFM in the Physical Fitness Facility was conducted using National Sporting Goods Association (NSGA) statistics for indoor activities. The NSGA surveys sports participation annually for 64 indoor and outdoor activities. The results are published as Series I and Series II. For purpose of this study, data for activities deemed to be appropriate for programming in a typical PFC were extrapolated from both Series I and II Publications and include:

CFM Component	NSGA Activity	NIRSA Recommended Area
Exercise Module	Aerobic Exercising	50SF per participant
Exercise Module	Calisthenics	50SF per participant
Exercise Module	Step Aerobics	50SF per participant
Exercise Module	Martial Arts	125SF per participant
Exercise Module	Kick Boxing	125SF per participant
Gymnasium Module	Basketball	14 participants (10 + 4 rotating)
Gymnasium Module	Volleyball	16 participants (12 + 4 rotating)
Fitness Module	Exercising w. Equipment	50SF per equipment station 65SF per free weight station
Structured Activity	Racquetball	4 participants per 800SF Court
Indoor Track	Exercise Walking	1 runner per 20 lineal feet
Indoor Track	Running / Jogging	1 runner 20 lineal feet

Assuming that the recreational interests of the AD population are similar to civilians, NSGA participation data is utilized to test each building component for meeting peak demand. Peak contact times vary from activity to activity. For instance, classroom activities require an instructor and participants meeting at a specific time. In a typical day with 16 hours of operation, it is feasible to program classes for two hours in the morning, two hours over lunch, and four hours in the evening. On weekends peak times are expected to be mid morning to late afternoon. Thus, the analysis tests a projected group of participants against a peak window of time that is approximately 55% of the total hours of operation per week.

Individual activities, such as exercising with equipment, have longer peak times (90% of hours of operation). While busiest peak times are anticipated to be early morning, users will access Fitness at all times of the day and evening.

The Gymnasium component is anticipated to have the greatest difficulty meeting peak demand because this activity requires a large number of users coming together simultaneously. Team activities are usually scheduled at lunchtime and evening. The number of players is small relative to the amount of space required for court play. Some court activities will have to be conducted in later hours of daily operation or throughout the weekend. Peak gymnasium hours are anticipated to be approximately 60% of the total hours of operation.

The Indoor Track is expected to have a shortfall of peak time. However, many participants will satisfy their needs by running or walking outdoors. Peak time for the indoor track is projected to be 80% of operating hours. As with fitness, individual participants can access the track at all hours of the day or evening.

The tables on the following pages show a total of available ***contact hours*** for each activity. A contact hour is defined as one user occupying one station for one hour. For example, if an Aerobics Room is 1,200 SF and NIRSA safety standards require 50SF of space for each occupant, than there are 24 ***stations*** in the room. For each one hour class there are 24 available contact hours. If the facility is operational for 100 hours a week, there are 2,400 available contact hours per week. The objective of this study is to compare the total peak contact hours for each CFM to a reasonable projection of participants to determine if each CFM is sized sufficiently to meet peak demand. Standard hours of operation are estimated to be 100 per week based on the following schedule:

PFC TYPE: (250-1000 Pop.)	**X-SMALL**					**ASSUMED MILITARY PERSONNEL:**		**73.9%**	**x 1,000**	**=**	**739**
WEEKDAY HOURS (M-F)	**6:00**	**to**	**22:00**	=	**16 hrs.**	**5days/wk**	=		**80 hrs.**		
WEEKEND HOURS (SA)	**8:00**	**to**	**19:00**	=	**11 hrs.**	**1days/wk**	=		**11 hrs.**		
WEEKEND HOURS (SU)	**8:00**	**to**	**17:00**	=	**9 hrs.**	**1days/wk**	=		**9 hrs.**		
									100 hrs.		

One-hundred hours is used as a baseline for the study and does not affect an installation's plans for staffing and operation under the Army baseline operating standards.

X-Small Facility - maximum population of 1,000 persons - approx. 74% peak users- 100 hours of operation per week

Aerobic Exercise 1,200 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Aerobic Exercising	11.4%	84	x	3 hrs/wk	252 hrs/wk	50 SF/user	24 stas.		
Step Aerobics	3.0%	22	x	3 hrs/wk	67 hrs/wk	50 SF/user	24 stas.		
Calisthenics	5.7%	42	x	3 hrs/wk	126 hrs/wk	50 SF/user	24 stas.		
TOTALS		**148**			**445 hrs/wk**	**50 SF/user**	**24 stas.**		**2400hrs/wk**
PEAK ATTENDANCE	**90%**	**of Stations in Use**					**22 stas.**		
PEAK UTILIZATION RATE	**55%**	**of Hours of Operation**		**=**	**55 hrs/wk**	**x**	**22 stas.**	**=**	**1188hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**1188hrs/wk**	**minus**	**445.16 hrs/wk**	**=**	**743hrs/wk**

Non-Structured Exercise 1,000 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Martial Arts	3.0%	22	x	2 hrs/wk	44 hrs/wk	125 SF/user	8 stas.		
Kick Boxing	2.2%	16	x	2 hrs/wk	32 hrs/wk	125 SF/user	8 stas.		
TOTALS		**38**			**76 hrs.**	**125 SF/user**	**8 stas.**		**800hrs/wk**
PEAK ATTENDANCE	**90%**	**of Stations in Use**					**7 stas.**		
PEAK UTILIZATION RATE	**55%**	**of Hours of Operation**		**=**	**55 hrs/wk**	**x**	**7 stas.**	**=**	**396hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**396hrs/wk**	**minus**	**76 hrs.**	**=**	**320hrs/wk**

Fitness Module (Weight/Cardio) 2,325 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Exercising with Equipment	24.5%	181	x	3 hrs/wk	544 hrs/wk	55.4 SF/user	42 stas.		
TOTALS		**181**			**544 hrs/wk**	**55.36 SF/user**	**42 stas.**		**4200hrs/wk**
PEAK ATTENDANCE	**80%**	**of Stations in Use**					**34 stas.**		
PEAK UTILIZATION RATE	**90%**	**of Hours of Operation**		**=**	**90 hrs/wk**	**x**	**34 stas.**	**=**	**3024hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**3024hrs/wk**	**minus**	**544 hrs/wk**	**=**	**2480hrs/wk**

Fitness Module (Weight/Cardio) 2,325 SF	LNS Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Exercising with Equipment	65.0%	480	x	3 hrs/wk	1440 hrs/wk	55.4 SF/user	42 stas.		
TOTALS		**480**			**1440 hrs/wk**	**55.36 SF/user**	**42 stas.**		**907hrs/wk**
PEAK ATTENDANCE	**80%**	**of Stations in Use**					**34 stas.**		
PEAK UTILIZATION RATE	**90%**	**of Hours of Operation**		**=**	**90 hrs/wk**	**x**	**34 stas.**	**=**	**3024hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**3024hrs/wk**	**minus**	**1440 hrs/wk**	**=**	**1584hrs/wk**

Gymnasium Module 10,200 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Court Size is 50 x 94 for a total playing area of:						4,700 SF	1 court/s		
Volleyball	6.4%	48	x	3 hrs/wk	143 hrs/wk	392 SF/user	16 players		
Basketball	18.3%	135	x	3 hrs/wk	406 hrs/wk	470 SF/user	14 players		
TOTALS (Average for SF/Per and Stations)		**183**			**549 hrs/wk**	**430.8 SF/user**	**15 players**		**1500hrs/wk**
PEAK ATTENDANCE	**100%**	**of Stations in Use**					**15 players**		
PEAK UTILIZATION RATE	**60%**	**of Hours of Operation**		**=**	**60 hrs/wk**	**x**	**15 players**	**=**	**900hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**900hrs/wk**	**minus**	**549 hrs/wk**	**=**	**351hrs/wk**

Note: VB assumes 12 players + 4 rotating players for each court. BB assumes 10 players + 4 waiting to rotate in for each court.

Racquetball Court 850 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Racquetball	3.1%	23	x	2 hrs/wk	46 hrs/wk	213 SF/user	4 occup.		
TOTALS		**23**			**46 hrs/wk**	**212.5 SF/user**	**4 occup.**		**400hrs/wk**
PEAK ATTENDANCE	**100%**	**of Stations in Use**					**4 occup.**		
PEAK UTILIZATION RATE	**50%**	**of Hours of Operation**		**=**	**50 hrs/wk**	**x**	**4 occup.**	**=**	**200hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**200hrs/wk**	**minus**	**46 hrs/wk**	**=**	**154hrs/wk**

Jogging Track 3,000 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Running / Jogging	14.6%	108	x	2 hrs/wk	216 hrs/wk		48 occup.		
Exercise Walking	28.8%	213	x	2 hrs/wk	425 hrs/wk		48 occup.		
TOTALS		**321**			**641 hrs/wk**		**48 occup.**		**4800hrs/wk**
PEAK ATTENDANCE	**60%**	**of Stations in Use**					**29 occup.**		
PEAK UTILIZATION RATE	**80%**	**of Hours of Operation**		**=**	**80 hrs/wk**	**x**	**29 occup.**	**=**	**2304hrs/wk**
AVAILABLE PEAK HOURS FOR ADDITIONAL PROGRAMMING					**2304hrs/wk**	**minus**	**641 hrs/wk**	**=**	**1663hrs/wk**

Small Facility - maximum population of 3,000 persons - approx. 74% peak users- 100 hours of operation per week

Aerobic Exercise 1,650 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Aerobic Exercising	11.4%	252	x	3 hrs/wk	757 hrs/wk	50 SF/user	33 stas.		
Step Aerobics	3.0%	67	x	3 hrs/wk	201 hrs/wk	50 SF/user	33 stas.		
Calisthenics	5.7%	126	x	3 hrs/wk	378 hrs/wk	50 SF/user	33 stas.		
TOTALS		**445**			**1335 hrs/wk**	**50 SF/user**	**33 stas.**		**3300hrs/wk**
PEAK ATTENDANCE	**90%**	**of Stations in Use**					**30 stas.**		
PEAK UTILIZATION RATE	**55%**	**of Hours of Operation**		**=**	**55 hrs/wk**	**x**	**30 stas.**	**=**	**1634hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**1634hrs/wk**	**minus**	**1335.5 hrs/wk**	**=**	**298hrs/wk**

Non-Structured Exercise 1,000 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Martial Arts	3.0%	66	x	2 hrs/wk	131 hrs/wk	125 SF/user	8 stas.		
Kick Boxing	2.2%	48	x	2 hrs/wk	95 hrs/wk	125 SF/user	8 stas.		
TOTALS		**113**			**226.707 hrs/wk**	**125 SF/user**	**8 stas.**		**800hrs/wk**
PEAK ATTENDANCE	**90%**	**of Stations in Use**					**7 stas.**		
PEAK UTILIZATION RATE	**55%**	**of Hours of Operation**		**=**	**55 hrs/wk**	**x**	**7 stas.**	**=**	**396hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**396hrs/wk**	**minus**	**226.71 hrs/wk**	**=**	**169hrs/wk**

Fitness Module (Weight/Cardio) 4645 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Exercising with Equipment	24.5%	544	x	3 hrs/wk	1632 hrs/wk	56 SF/user	83 stas.		
TOTALS		**544**			**1632 hrs/wk**	**55.96 SF/user**	**83 stas.**		**8300hrs/wk**
PEAK ATTENDANCE	**80%**	**of Stations in Use**					**66 stas.**		
PEAK UTILIZATION RATE	**90%**	**of Hours of Operation**		**=**	**90 hrs/wk**	**x**	**66 stas.**	**=**	**5976hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**5976hrs/wk**	**minus**	**1632 hrs/wk**	**=**	**4344hrs/wk**

Fitness Module (Weight/Cardio) 4,645 SF	LNS Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Exercising with Equipment	65.0%	1440	x	3 hrs/wk	4321 hrs/wk	56 SF/user	83 stas.		
TOTALS		**1440**			**4321 hrs/wk**	**55.96 SF/user**	**83 stas.**		**8300hrs/wk**
PEAK ATTENDANCE	**80%**	**of Stations in Use**					**66 stas.**		
PEAK UTILIZATION RATE	**90%**	**of Hours of Operation**		**=**	**90 hrs/wk**	**x**	**66 stas.**	**=**	**5976hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**5976hrs/wk**	**minus**	**4321 hrs/wk**	**=**	**1655hrs/wk**

Gymnasium Module 17,400 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Court Size is 50 x 94 for a total playing area of:						9,400 SF	2 court/s		
Volleyball	6.4%	143	x	3 hrs/wk	428 hrs/wk	392 SF/user	32 players		
Basketball	18.3%	406	x	3 hrs/wk	1219 hrs/wk	470 SF/user	28 players		
TOTALS (Average for SF/Per and Stations)		**549**			**1647 hrs/wk**	**430.8 SF/user**	**30 players**		**3000hrs/wk**
PEAK ATTENDANCE	**100%**	**of Stations in Use**					**30 players**		
PEAK UTILIZATION RATE	**60%**	**of Hours of Operation**		**=**	**60 hrs/wk**	**x**	**30 players**	**=**	**1800hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**1800hrs/wk**	**minus**	**1647 hrs/wk**	**=**	**153hrs/wk**

Note: VB assumes 12 players + 4 rotating players for each court. BB assumes 10 players + 4 waiting to rotate in for each court.

Racquetball Court 850 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Racquetball	3.1%	69	x	2 hrs/wk	138 hrs/wk	213 SF/user	4 occup.		
TOTALS		**69**			**138 hrs/wk**	**212.5 SF/user**	**4 occup.**		**400hrs/wk**
PEAK ATTENDANCE	**100%**	**of Stations in Use**					**4 occup.**		
PEAK UTILIZATION RATE	**50%**	**of Hours of Operation**		**=**	**50 hrs/wk**	**x**	**4 occup.**	**=**	**200hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**200hrs/wk**	**minus**	**138 hrs/wk**	**=**	**62hrs/wk**

Jogging Track 4,200 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Running / Jogging	14.6%	325	x	2 hrs/wk	649 hrs/wk		66 occup.		
Exercise Walking	28.8%	638	x	2 hrs/wk	1275 hrs/wk		66 occup.		
TOTALS		**962**			**1924 hrs/wk**		**66 occup.**		**6600hrs/wk**
PEAK ATTENDANCE	**60%**	**of Stations in Use**					**40 occup.**		
PEAK UTILIZATION RATE	**80%**	**of Hours of Operation**		**=**	**80 hrs/wk**	**x**	**40 occup.**	**=**	**3168hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**3168hrs/wk**	**minus**	**1924 hrs/wk**	**=**	**1244hrs/wk**

Medium Facility - maximum population of 6,000 persons - approx. 74% peak users- 100 hours of operation per week

Aerobic Exercise 2,800 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Aerobic Exercising	11.4%	504	x	3 hrs/wk	1513 hrs/wk	50 SF/user	56 stas.		
Step Aerobics	3.0%	134	x	3 hrs/wk	402 hrs/wk	50 SF/user	56 stas.		
Calisthenics	5.7%	252	x	3 hrs/wk	756 hrs/wk	50 SF/user	56 stas.		
TOTALS		**890**			**2671 hrs/wk**	**50 SF/user**	**56 stas.**		**5600hrs/wk**
PEAK ATTENDANCE	**90%**	**of Stations in Use**					**50 stas.**		
PEAK UTILIZATION RATE	**55%**	**of Hours of Operation**		**=**	**55 hrs/wk**	**x**	**50 stas.**	**=**	**2772hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**2772hrs/wk**	**minus**	**2671 hrs/wk**	**=**	**101hrs/wk**

Non-Structured Exercise 2,150 SF	Average Particip.	Projected Participants	Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Martial Arts	3.0%	131	x 2 hrs/wk	262 hrs/wk	125 SF/user	17 stas.		
Kick Boxing	2.2%	95	x 2 hrs/wk	191 hrs/wk	125 SF/user	17 stas.		
TOTALS		**227**		**453.414 hrs/wk**	**125 SF/user**	**17 stas.**		**1720hrs/wk**
PEAK ATTENDANCE	**90%**	**of Stations in Use**				**15 stas.**		
PEAK UTILIZATION RATE	**55%**	**of Hours of Operation**	**=**	**55 hrs/wk**	**x**	**15 stas.**	**=**	**851hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING				**851hrs/wk**	**minus**	**453.41 hrs/wk**	**=**	**398hrs/wk**

Fitness Module (Weight/Cardio) 7,300 SF	Average Particip.	Projected Participants	Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Exercising with Equipment	24.5%	1088	x 3 hrs/wk	3263 hrs/wk	55.7 SF/user	131 stas.		
TOTALS		**1088**		**3263 hrs/wk**	**55.73 SF/user**	**131 stas.**		**13100hrs/wk**
PEAK ATTENDANCE	**80%**	**of Stations in Use**				**105 stas.**		
PEAK UTILIZATION RATE	**90%**	**of Hours of Operation**	**=**	**90 hrs/wk**	**x**	**105 stas.**	**=**	**9432hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING				**9432hrs/wk**	**minus**	**3263 hrs/wk**	**=**	**6169hrs/wk**

Fitness Module (Weight/Cardio) 7,300 SF	LNS Particip.	Projected Participants	Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Exercising with Equipment	65.0%	2881	x 3 hrs/wk	8643 hrs/wk	55.7 SF/user	131 stas.		
TOTALS		**2881**		**8643 hrs/wk**	**55.73 SF/user**	**131 stas.**		**13100hrs/wk**
PEAK ATTENDANCE	**80%**	**of Stations in Use**				**105 stas.**		
PEAK UTILIZATION RATE	**90%**	**of Hours of Operation**	**=**	**90 hrs/wk**	**x**	**105 stas.**	**=**	**9432hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING				**9432hrs/wk**	**minus**	**8643 hrs/wk**	**=**	**789hrs/wk**

Gymnasium Module 24,600 SF	Average Particip.	Projected Participants	Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Court Size is 50 x 94 for a total playing area of:					14,100 SF	3 court/s		
Volleyball	6.4%	286	x 3 hrs/wk	857 hrs/wk	392 SF/user	48 players		
Basketball	18.3%	813	x 3 hrs/wk	2438 hrs/wk	470 SF/user	42 players		
TOTALS (Average for SF/Per and Stations)		**1098**		**3295 hrs/wk**	**430.8 SF/user**	**45 players**		**4500hrs/wk**
PEAK ATTENDANCE	**100%**	**of Stations in Use**				**45 players**		
PEAK UTILIZATION RATE	**60%**	**of Hours of Operation**	**=**	**60 hrs/wk**	**x**	**45 players**	**=**	**2700hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING				**2700hrs/wk**	**minus**	**3295 hrs/wk**	**=**	**-595hrs/wk**

Note: VB assumes 12 players + 4 rotating players for each court. BB assumes 10 players + 4 waiting to rotate in for each court.

Racquetball Court 850 SF	Average Particip.	Projected Participants	Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Racquetball	3.1%	138	x 2 hrs/wk	276 hrs/wk	213 SF/user	4 occup.		
TOTALS		**138**		**276 hrs/wk**	**212.5 SF/user**	**4 occup.**		**400hrs/wk**
PEAK ATTENDANCE	**100%**	**of Stations in Use**				**4 occup.**		
PEAK UTILIZATION RATE	**50%**	**of Hours of Operation**	**=**	**50 hrs/wk**	**x**	**4 occup.**	**=**	**200hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING				**200hrs/wk**	**minus**	**276 hrs/wk**	**=**	**-76hrs/wk**

Jogging Track 5,300 SF	Average Particip.	Projected Participants	Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Running / Jogging	14.6%	649	x 2 hrs/wk	1298 hrs/wk		84 occup.		
Exercise Walking	28.8%	1275	x 2 hrs/wk	2550 hrs/wk		84 occup.		
TOTALS		**1924**		**3849 hrs/wk**		**84 occup.**		**8400hrs/wk**
PEAK ATTENDANCE	**60%**	**of Stations in Use**				**50 occup.**		
PEAK UTILIZATION RATE	**80%**	**of Hours of Operation**	**=**	**80 hrs/wk**	**x**	**50 occup.**	**=**	**4032hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING				**4032hrs/wk**	**minus**	**3849 hrs/wk**	**=**	**183hrs/wk**

Large Facility - maximum population of 10,000 persons - approx. 74% peak users- 100 hours of operation per week

Aerobic Exercise 4,500 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Aerobic Exercising	11.4%	841	x	3 hrs/wk	2522 hrs/wk	50 SF/user	90 stas.		
Step Aerobics	3.0%	223	x	3 hrs/wk	670 hrs/wk	50 SF/user	90 stas.		
Calisthenics	5.7%	420	x	3 hrs/wk	1259 hrs/wk	50 SF/user	90 stas.		
TOTALS		**1484**			**4452 hrs/wk**	**50 SF/user**	**90 stas.**		**9000hrs/wk**
PEAK ATTENDANCE	**90%**	**of Stations in Use**					**81 stas.**		
PEAK UTILIZATION RATE	**55%**	**of Hours of Operation**		**=**	**55 hrs/wk**	**x**	**81 stas.**	**=**	**4455hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**4455hrs/wk**	**minus**	**4451.6 hrs/wk**	**=**	**3hrs/wk**

Non-Structured Exercise 2,500 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Martial Arts	3.0%	219	x	2 hrs/wk	437 hrs/wk	125 SF/user	20 stas.		
Kick Boxing	2.2%	159	x	2 hrs/wk	318 hrs/wk	125 SF/user	20 stas.		
TOTALS		**378**			**755.689 hrs/wk**	**125 SF/user**	**20 stas.**		**2000hrs/wk**
PEAK ATTENDANCE	**80%**	**of Stations in Use**					**16 stas.**		
PEAK UTILIZATION RATE	**50%**	**of Hours of Operation**		**=**	**50 hrs/wk**	**x**	**16 stas.**	**=**	**800hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**800hrs/wk**	**minus**	**756 hrs/wk**	**=**	**44hrs/wk**

Fitness Module (Weight/Cardio) 11,500 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Exercising with Equipment	24.5%	1813	x	3 hrs/wk	5438 hrs/wk	55.8 SF/user	206 stas.		
TOTALS		**1813**			**5438 hrs/wk**	**55.83 SF/user**	**206 stas.**		**20600hrs/wk**
PEAK ATTENDANCE	**80%**	**of Stations in Use**					**165 stas.**		
PEAK UTILIZATION RATE	**90%**	**of Hours of Operation**		**=**	**90 hrs/wk**	**x**	**165 stas.**	**=**	**14832hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**14832hrs/wk**	**minus**	**5438 hrs/wk**	**=**	**9394hrs/wk**

Fitness Module (Weight/Cardio) 11,500 SF	LNS Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Exercising with Equipment	65.0%	4801	x	3 hrs/wk	14404 hrs/wk	55.8 SF/user	206 stas.		
TOTALS		**4801**			**14404 hrs/wk**	**55.83 SF/user**	**206 stas.**		**20600hrs/wk**
PEAK ATTENDANCE	**80%**	**of Stations in Use**					**165 stas.**		
PEAK UTILIZATION RATE	**90%**	**of Hours of Operation**		**=**	**90 hrs/wk**	**x**	**165 stas.**	**=**	**14832hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**14832hrs/wk**	**minus**	**14404 hrs/wk**	**=**	**428hrs/wk**

Gymnasium Module 31,800 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Court Size is 50 x 94 for a total playing area of:						18,800 SF	4 court/s		
Volleyball	6.4%	476	x	3 hrs/wk	1428 hrs/wk	392 SF/user	64 players		
Basketball	18.3%	1354	x	3 hrs/wk	4063 hrs/wk	470 SF/user	56 players		
TOTALS (Average for SF/Per and Stations)		**1830**			**5491 hrs/wk**	**430.8 SF/user**	**60 players**		**6000hrs/wk**
PEAK ATTENDANCE	**100%**	**of Stations in Use**					**60 players**		
PEAK UTILIZATION RATE	**60%**	**of Hours of Operation**		**=**	**60 hrs/wk**	**x**	**60 players**	**=**	**3600hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**3600hrs/wk**	**minus**	**5491 hrs/wk**	**=**	**-1891hrs/wk**

Note: VB assumes 12 players + 4 rotating players for each court. BB assumes 10 players + 4 waiting to rotate in for each court.

Racquetball Courts 1,700 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Racquetball	3.1%	230	x	2 hrs/wk	461 hrs/wk	213 SF/user	8 occup.		
TOTALS		**230**			**461 hrs/wk**	**212.5 SF/user**	**8 occup.**		**800hrs/wk**
PEAK ATTENDANCE	**100%**	**of Stations in Use**					**8 occup.**		
PEAK UTILIZATION RATE	**50%**	**of Hours of Operation**		**=**	**50 hrs/wk**	**x**	**8 occup.**	**=**	**400hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**400hrs/wk**	**minus**	**461 hrs/wk**	**=**	**-61hrs/wk**

Jogging Track 6400 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Running / Jogging	14.6%	1082	x	2 hrs/wk	2164 hrs/wk		102 occup.		
Exercise Walking	28.8%	2125	x	2 hrs/wk	4250 hrs/wk		102 occup.		
TOTALS		**3207**			**6414 hrs/wk**		**102 occup.**		**10200hrs/wk**
PEAK ATTENDANCE	**60%**	**of Stations in Use**					**61 occup.**		
PEAK UTILIZATION RATE	**80%**	**of Hours of Operation**		**=**	**80 hrs/wk**	**x**	**61 occup.**	**=**	**4896hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**4896hrs/wk**	**minus**	**6414 hrs/wk**	**=**	**-1518hrs/wk**

Maximum authorized population of 20,000 - 100 hours of operation per week:

Base Population: (15,001-20,000)

Aerobic Exercise 9,000 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Aerobic Exercising	11.4%	1681	x	3 hrs/wk	5044 hrs/wk	50 SF/user	180 stas.		
Step Aerobics	3.0%	447	x	3 hrs/wk	1340 hrs/wk	50 SF/user	180 stas.		
Calisthenics	5.7%	840	x	3 hrs/wk	2519 hrs/wk	50 SF/user	180 stas.		
TOTALS		**2968**			**8903 hrs/wk**	**50 SF/user**	**180 stas.**		**18000hrs/wk**
PEAK ATTENDANCE	**90%**	**of Stations in Use**					**162 stas.**		
PEAK UTILIZATION RATE	**55%**	**of Hours of Operation**		**=**	**55 hrs/wk**	**x**	**162 stas.**	**=**	**8910hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**8910hrs/wk**	**minus**	**8903.2 hrs/wk**	**=**	**7hrs/wk**

Non-Structured Exercise 5,000 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Martial Arts	3.0%	437	x	2 hrs/wk	875 hrs/wk	125 SF/user	40 stas.		
Kick Boxing	2.2%	318	x	2 hrs/wk	636 hrs/wk	125 SF/user	40 stas.		
TOTALS		**756**			**1511.38 hrs/wk**	**125 SF/user**	**40 stas.**		**4000hrs/wk**
PEAK ATTENDANCE	**80%**	**of Stations in Use**					**32 stas.**		
PEAK UTILIZATION RATE	**50%**	**of Hours of Operation**		**=**	**50 hrs/wk**	**x**	**32 stas.**	**=**	**1600hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**1600hrs/wk**	**minus**	**1511.4 hrs/wk**	**=**	**89hrs/wk**

Fitness Module (Weight/Cardio) 23,000 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Exercising with Equipment	24.5%	3626	x	3 hrs/wk	10877 hrs/wk	55.8 SF/user	412 stas.		
TOTALS		**3626**			**10877 hrs/wk**	**55.83 SF/user**	**412 stas.**		**41200hrs/wk**
PEAK ATTENDANCE	**80%**	**of Stations in Use**					**330 stas.**		
PEAK UTILIZATION RATE	**90%**	**of Hours of Operation**		**=**	**90 hrs/wk**	**x**	**330 stas.**	**=**	**29664hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**29664hrs/wk**	**minus**	**10877 hrs/wk**	**=**	**18787hrs/wk**

Fitness Module (Weight/Cardio) 23,000 SF	LNS Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Exercising with Equipment	65.0%	9603	x	3 hrs/wk	28809 hrs/wk	55.8 SF/user	412 stas.		
TOTALS		**9603**			**28809 hrs/wk**	**55.83 SF/user**	**412 stas.**		**41200hrs/wk**
PEAK ATTENDANCE	**80%**	**of Stations in Use**					**330 stas.**		
PEAK UTILIZATION RATE	**90%**	**of Hours of Operation**		**=**	**90 hrs/wk**	**x**	**330 stas.**	**=**	**29664hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**29664hrs/wk**	**minus**	**28809 hrs/wk**	**=**	**855hrs/wk**

Gymnasium Module 48,600 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Court Size is 50 x 94 for a total playing area of:						28,200 SF	6 court/s		
Volleyball	6.4%	952	x	3 hrs/wk	2856 hrs/wk	392 SF/user	96 players		
Basketball	18.3%	2709	x	3 hrs/wk	8127 hrs/wk	470 SF/user	84 players		
TOTALS (Average for SF/Per and Stations)		**3661**			**10983 hrs/wk**	**430.8 SF/user**	**90 players**		**9000hrs/wk**
PEAK ATTENDANCE	**100%**	**of Stations in Use**					**90 players**		
PEAK UTILIZATION RATE	**60%**	**of Hours of Operation**		**=**	**60 hrs/wk**	**x**	**90 players**	**=**	**5400hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**5400hrs/wk**	**minus**	**10983 hrs/wk**	**=**	**-5583hrs/wk**

Note: VB assumes 12 players + 4 rotating players for each court. BB assumes 10 players + 4 waiting to rotate in for each court.

Racquetball Courts 3,400 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Racquetball	3.1%	461	x	2 hrs/wk	921 hrs/wk	213 SF/user	16 occup.		
TOTALS		**461**			**921 hrs/wk**	**212.5 SF/user**	**16 occup.**		**1600hrs/wk**
PEAK ATTENDANCE	**100%**	**of Stations in Use**					**16 occup.**		
PEAK UTILIZATION RATE	**50%**	**of Hours of Operation**		**=**	**50 hrs/wk**	**x**	**16 occup.**	**=**	**800hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**800hrs/wk**	**minus**	**921 hrs/wk**	**=**	**-121hrs/wk**

Jogging Track 6,400 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Running / Jogging	14.6%	2164	x	2 hrs/wk	4328 hrs/wk		150 occup.		
Exercise Walking	28.8%	4250	x	2 hrs/wk	8501 hrs/wk		150 occup.		
TOTALS		**6414**			**12828 hrs/wk**		**150 occup.**		**15000hrs/wk**
PEAK ATTENDANCE	**60%**	**of Stations in Use**					**90 occup.**		
PEAK UTILIZATION RATE	**80%**	**of Hours of Operation**		**=**	**80 hrs/wk**	**x**	**90 occup.**	**=**	**7200hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**7200hrs/wk**	**minus**	**12828 hrs/wk**	**=**	**-5628hrs/wk**

Maximum authorized population of 25,000 - 100 hours of operation per week:

Base Population: (20,001-25,000)

Aerobic Exercise 11,250 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Aerobic Exercising	11.4%	2102	x	3 hrs/wk	6306 hrs/wk	50 SF/user	225 stas.		
Step Aerobics	3.0%	558	x	3 hrs/wk	1675 hrs/wk	50 SF/user	225 stas.		
Calisthenics	5.7%	1049	x	3 hrs/wk	3148 hrs/wk	50 SF/user	225 stas.		
TOTALS		**3710**			**11129 hrs/wk**	**50 SF/user**	**225 stas.**		**22500hrs/wk**
PEAK ATTENDANCE	**90%**	**of Stations in Use**					**203 stas.**		
PEAK UTILIZATION RATE	**55%**	**of Hours of Operation**		**=**	**55 hrs/wk**	**x**	**203 stas.**	**=**	**11138hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**11138hrs/wk**	**minus**	**11129 hrs/wk**	**=**	**8hrs/wk**

Non-Structured Exercise 6,250 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Martial Arts	3.0%	547	x	2 hrs/wk	1094 hrs/wk	125 SF/user	50 stas.		
Kick Boxing	2.2%	398	x	2 hrs/wk	796 hrs/wk	125 SF/user	50 stas.		
TOTALS		**945**			**1889.22 hrs/wk**	**125 SF/user**	**50 stas.**		**5000hrs/wk**
PEAK ATTENDANCE	**80%**	**of Stations in Use**					**40 stas.**		
PEAK UTILIZATION RATE	**50%**	**of Hours of Operation**		**=**	**50 hrs/wk**	**x**	**40 stas.**	**=**	**2000hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**2000hrs/wk**	**minus**	**1889.2 hrs/wk**	**=**	**111hrs/wk**

Fitness Module (Weight/Cardio) 28,750 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Exercising with Equipment	24.5%	4532	x	3 hrs/wk	13596 hrs/wk	55.8 SF/user	515 stas.		
TOTALS		**4532**			**13596 hrs/wk**	**55.83 SF/user**	**515 stas.**		**51500hrs/wk**
PEAK ATTENDANCE	**80%**	**of Stations in Use**					**412 stas.**		
PEAK UTILIZATION RATE	**90%**	**of Hours of Operation**		**=**	**90 hrs/wk**	**x**	**412 stas.**	**=**	**37080hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**37080hrs/wk**	**minus**	**13596 hrs/wk**	**=**	**23484hrs/wk**

Fitness Module (Weight/Cardio) 28,750 SF	LNS Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Exercising with Equipment	65.0%	12004	x	3 hrs/wk	36011 hrs/wk	55.8 SF/user	515 stas.		
TOTALS		**12004**			**36011 hrs/wk**	**55.83 SF/user**	**515 stas.**		**51500hrs/wk**
PEAK ATTENDANCE	**80%**	**of Stations in Use**					**412 stas.**		
PEAK UTILIZATION RATE	**90%**	**of Hours of Operation**		**=**	**90 hrs/wk**	**x**	**412 stas.**	**=**	**37080hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**37080hrs/wk**	**minus**	**36011 hrs/wk**	**=**	**1069hrs/wk**

Gymnasium Module 57,000 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Court Size is 50 x 94 for a total playing area of:						32,900 SF	7 court/s		
Volleyball	6.4%	1190	x	3 hrs/wk	3570 hrs/wk	392 SF/user	112 players		
Basketball	18.3%	3386	x	3 hrs/wk	10158 hrs/wk	470 SF/user	98 players		
TOTALS (Average for SF/Per and Stations)		**4576**			**13728 hrs/wk**	**430.8 SF/user**	**105 players**		**10500hrs/wk**
PEAK ATTENDANCE	**100%**	**of Stations in Use**					**105 players**		
PEAK UTILIZATION RATE	**60%**	**of Hours of Operation**		**=**	**60 hrs/wk**	**x**	**105 players**	**=**	**6300hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**6300hrs/wk**	**minus**	**13728 hrs/wk**	**=**	**-7428hrs/wk**

Note: VB assumes 12 players + 4 rotating players for each court. BB assumes 10 players + 4 waiting to rotate in for each court.

Racquetball Courts 4,250 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Racquetball	3.1%	576	x	2 hrs/wk	1152 hrs/wk	213 SF/user	20 occup.		
TOTALS		**576**			**1152 hrs/wk**	**212.5 SF/user**	**20 occup.**		**2000hrs/wk**
PEAK ATTENDANCE	**100%**	**of Stations in Use**					**20 occup.**		
PEAK UTILIZATION RATE	**50%**	**of Hours of Operation**		**=**	**50 hrs/wk**	**x**	**20 occup.**	**=**	**1000hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**1000hrs/wk**	**minus**	**1152 hrs/wk**	**=**	**-152hrs/wk**

Jogging Track 6,400 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Running / Jogging	14.6%	2705	x	2 hrs/wk	5410 hrs/wk		150 occup.		
Exercise Walking	28.8%	5313	x	2 hrs/wk	10626 hrs/wk		150 occup.		
TOTALS		**8018**			**16036 hrs/wk**		**150 occup.**		**15000hrs/wk**
PEAK ATTENDANCE	**60%**	**of Stations in Use**					**90 occup.**		
PEAK UTILIZATION RATE	**80%**	**of Hours of Operation**		**=**	**80 hrs/wk**	**x**	**90 occup.**	**=**	**7200hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**7200hrs/wk**	**minus**	**16036 hrs/wk**	**=**	**-8836hrs/wk**

Maximum authorized population of 30,000 - 100 hours of operation per week:

Base Population: (25,001-30,000)

Aerobic Exercise 13,500 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Aerobic Exercising	11.4%	2522	x	3 hrs/wk	7567 hrs/wk	50 SF/user	270 stas.		
Step Aerobics	3.0%	670	x	3 hrs/wk	2010 hrs/wk	50 SF/user	270 stas.		
Calisthenics	5.7%	1259	x	3 hrs/wk	3778 hrs/wk	50 SF/user	270 stas.		
TOTALS		**4452**			**13355 hrs/wk**	**50 SF/user**	**270 stas.**		**27000hrs/wk**
PEAK ATTENDANCE	**90%**	**of Stations in Use**					**243 stas.**		
PEAK UTILIZATION RATE	**55%**	**of Hours of Operation**		**=**	**55 hrs/wk**	**x**	**243 stas.**	**=**	**13365hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**13365hrs/wk**	**minus**	**13355 hrs/wk**	**=**	**10hrs/wk**

Non-Structured Exercise 7,500 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Martial Arts	3.0%	656	x	2 hrs/wk	1312 hrs/wk	125 SF/user	60 stas.		
Kick Boxing	2.2%	477	x	2 hrs/wk	955 hrs/wk	125 SF/user	60 stas.		
TOTALS		**1134**			**2267.07 hrs/wk**	**125 SF/user**	**60 stas.**		**6000hrs/wk**
PEAK ATTENDANCE	**80%**	**of Stations in Use**					**48 stas.**		
PEAK UTILIZATION RATE	**50%**	**of Hours of Operation**		**=**	**50 hrs/wk**	**x**	**48 stas.**	**=**	**2400hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**2400hrs/wk**	**minus**	**2267.1 hrs/wk**	**=**	**133hrs/wk**

Fitness Module (Weight/Cardio) 34,500 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Exercising with Equipment	24.5%	5438	x	3 hrs/wk	16315 hrs/wk	55.8 SF/user	618 stas.		
TOTALS		**5438**			**16315 hrs/wk**	**55.83 SF/user**	**618 stas.**		**61800hrs/wk**
PEAK ATTENDANCE	**80%**	**of Stations in Use**					**494 stas.**		
PEAK UTILIZATION RATE	**90%**	**of Hours of Operation**		**=**	**90 hrs/wk**	**x**	**494 stas.**	**=**	**44496hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**44496hrs/wk**	**minus**	**16315 hrs/wk**	**=**	**28181hrs/wk**

Fitness Module (Weight/Cardio) 34,500 SF	LNS Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Exercising with Equipment	65.0%	14404	x	3 hrs/wk	43213 hrs/wk	55.8 SF/user	618 stas.		
TOTALS		**14404**			**43213 hrs/wk**	**55.83 SF/user**	**618 stas.**		**61800hrs/wk**
PEAK ATTENDANCE	**80%**	**of Stations in Use**					**494 stas.**		
PEAK UTILIZATION RATE	**90%**	**of Hours of Operation**		**=**	**90 hrs/wk**	**x**	**494 stas.**	**=**	**44496hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**44496hrs/wk**	**minus**	**43213 hrs/wk**	**=**	**1283hrs/wk**

Gymnasium Module 65,400 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Court Size is 50 x 94 for a total playing area of:						37,600 SF	8 court/s		
Volleyball	6.4%	1428	x	3 hrs/wk	4284 hrs/wk	392 SF/user	128 players		
Basketball	18.3%	4063	x	3 hrs/wk	12190 hrs/wk	470 SF/user	112 players		
TOTALS (Average for SF/Per and Stations)		**5491**			**16474 hrs/wk**	**430.8 SF/user**	**120 players**		**12000hrs/wk**
PEAK ATTENDANCE	**100%**	**of Stations in Use**					**120 players**		
PEAK UTILIZATION RATE	**60%**	**of Hours of Operation**		**=**	**60 hrs/wk**	**x**	**120 players**	**=**	**7200hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**7200hrs/wk**	**minus**	**16474 hrs/wk**	**=**	**-9274hrs/wk**

Note: VB assumes 12 players + 4 rotating players for each court. BB assumes 10 players + 4 waiting to rotate in for each court.

Racquetball Courts 5,100 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Racquetball	3.1%	691	x	2 hrs/wk	1382 hrs/wk	213 SF/user	24 occup.		
TOTALS		**691**			**1382 hrs/wk**	**212.5 SF/user**	**24 occup.**		**2400hrs/wk**
PEAK ATTENDANCE	**100%**	**of Stations in Use**					**24 occup.**		
PEAK UTILIZATION RATE	**50%**	**of Hours of Operation**		**=**	**50 hrs/wk**	**x**	**24 occup.**	**=**	**1200hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**1200hrs/wk**	**minus**	**1382 hrs/wk**	**=**	**-182hrs/wk**

Jogging Track 6,400 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Running / Jogging	14.6%	3246	x	2 hrs/wk	6492 hrs/wk		150 occup.		
Exercise Walking	28.8%	6376	x	2 hrs/wk	12751 hrs/wk		150 occup.		
TOTALS		**9621**			**19243 hrs/wk**		**150 occup.**		**15000hrs/wk**
PEAK ATTENDANCE	**60%**	**of Stations in Use**					**90 occup.**		
PEAK UTILIZATION RATE	**80%**	**of Hours of Operation**		**=**	**80 hrs/wk**	**x**	**90 occup.**	**=**	**7200hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**7200hrs/wk**	**minus**	**19243 hrs/wk**	**=**	**-12043hrs/wk**

Maximum authorized population of 35,000 - 100 hours of operation per week:

Base Population: (30,001-35,000)

Aerobic Exercise 15,750 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Aerobic Exercising	11.4%	2943	x	3 hrs/wk	8828 hrs/wk	50 SF/user	315 stas.		
Step Aerobics	3.0%	782	x	3 hrs/wk	2346 hrs/wk	50 SF/user	315 stas.		
Calisthenics	5.7%	1469	x	3 hrs/wk	4407 hrs/wk	50 SF/user	315 stas.		
TOTALS		**5194**			**15581 hrs/wk**	**50 SF/user**	**315 stas.**		**31500hrs/wk**
PEAK ATTENDANCE	**90%**	**of Stations in Use**					**284 stas.**		
PEAK UTILIZATION RATE	**55%**	**of Hours of Operation**		**=**	**55 hrs/wk**	**x**	**284 stas.**	**=**	**15593hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**15593hrs/wk**	**minus**	**15581 hrs/wk**	**=**	**12hrs/wk**

Non-Structured Exercise 8,750 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Martial Arts	3.0%	766	x	2 hrs/wk	1531 hrs/wk	125 SF/user	70 stas.		
Kick Boxing	2.2%	557	x	2 hrs/wk	1114 hrs/wk	125 SF/user	70 stas.		
TOTALS		**1322**			**2644.91 hrs/wk**	**125 SF/user**	**70 stas.**		**7000hrs/wk**
PEAK ATTENDANCE	**80%**	**of Stations in Use**					**56 stas.**		
PEAK UTILIZATION RATE	**50%**	**of Hours of Operation**		**=**	**50 hrs/wk**	**x**	**56 stas.**	**=**	**2800hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**2800hrs/wk**	**minus**	**2644.9 hrs/wk**	**=**	**155hrs/wk**

Fitness Module (Weight/Cardio) 40,250 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Exercising with Equipment	24.5%	6345	x	3 hrs/wk	19034 hrs/wk	56 SF/user	721 stas.		
TOTALS		**6345**			**19034 hrs/wk**	**56 SF/user**	**721 stas.**		**72100hrs/wk**
PEAK ATTENDANCE	**80%**	**of Stations in Use**					**577 stas.**		
PEAK UTILIZATION RATE	**90%**	**of Hours of Operation**		**=**	**90 hrs/wk**	**x**	**577 stas.**	**=**	**51912hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**51912hrs/wk**	**minus**	**19034 hrs/wk**	**=**	**32878hrs/wk**

Fitness Module (Weight/Cardio) 40,250 SF	LNS Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Exercising with Equipment	65.0%	16805	x	3 hrs/wk	50416 hrs/wk	56 SF/user	721 stas.		
TOTALS		**16805**			**50416 hrs/wk**	**56 SF/user**	**721 stas.**		**72100hrs/wk**
PEAK ATTENDANCE	**80%**	**of Stations in Use**					**577 stas.**		
PEAK UTILIZATION RATE	**90%**	**of Hours of Operation**		**=**	**90 hrs/wk**	**x**	**577 stas.**	**=**	**51912hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**51912hrs/wk**	**minus**	**50416 hrs/wk**	**=**	**1496hrs/wk**

Gymnasium Module 73,800 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Court Size is 50 x 94 for a total playing area of:						42,300 SF	9 court/s		
Volleyball	6.4%	1666	x	3 hrs/wk	4998 hrs/wk	392 SF/user	144 players		
Basketball	18.3%	4741	x	3 hrs/wk	14222 hrs/wk	470 SF/user	126 players		
TOTALS (Average for SF/Per and Stations)		**6407**			**19220 hrs/wk**	**431 SF/user**	**135 players**		**13500hrs/wk**
PEAK ATTENDANCE	**100%**	**of Stations in Use**					**135 players**		
PEAK UTILIZATION RATE	**60%**	**of Hours of Operation**		**=**	**60 hrs/wk**	**x**	**135 players**	**=**	**8100hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**8100hrs/wk**	**minus**	**19220 hrs/wk**	**=**	**-11120hrs/wk**

Note: VB assumes 12 players + 4 rotating players for each court. BB assumes 10 players + 4 waiting to rotate in for each court.

Racquetball Courts 5,950 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Racquetball	3.1%	806	x	2 hrs/wk	1612 hrs/wk	212.5 SF/user	28 occup.		
TOTALS		**806**			**1612 hrs/wk**	**212.5 SF/user**	**28 occup.**		**2800hrs/wk**
PEAK ATTENDANCE	**100%**	**of Stations in Use**					**28 occup.**		
PEAK UTILIZATION RATE	**50%**	**of Hours of Operation**		**=**	**50 hrs/wk**	**x**	**28 occup.**	**=**	**1400hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**1400hrs/wk**	**minus**	**1612 hrs/wk**	**=**	**-212hrs/wk**

Jogging Track 6,400 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Running / Jogging	14.6%	3787	x	2 hrs/wk	7574 hrs/wk		150 occup.		
Exercise Walking	28.8%	7438	x	2 hrs/wk	14876 hrs/wk		150 occup.		
TOTALS		**11225**			**22450 hrs/wk**		**150 occup.**		**15000hrs/wk**
PEAK ATTENDANCE	**60%**	**of Stations in Use**					**90 occup.**		
PEAK UTILIZATION RATE	**80%**	**of Hours of Operation**		**=**	**80 hrs/wk**	**x**	**90 occup.**	**=**	**7200hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**7200hrs/wk**	**minus**	**22450 hrs/wk**	**=**	**-15250hrs/wk**

Maximum authorized population of 40,000 - 100 hours of operation per week:

Base Population: (35,001-40,000)

Aerobic Exercise 18,000 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Aerobic Exercising	11.4%	3363	x	3 hrs/wk	10089 hrs/wk	50 SF/user	360 stas.		
Step Aerobics	3.0%	894	x	3 hrs/wk	2681 hrs/wk	50 SF/user	360 stas.		
Calisthenics	5.7%	1679	x	3 hrs/wk	5037 hrs/wk	50 SF/user	360 stas.		
TOTALS		**5935**			**17806 hrs/wk**	**50 SF/user**	**360 stas.**		**36000hrs/wk**
PEAK ATTENDANCE	**90%**	**of Stations in Use**					**324 stas.**		
PEAK UTILIZATION RATE	**55%**	**of Hours of Operation**		**=**	**55 hrs/wk**	**x**	**324 stas.**	**=**	**17820hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**17820hrs/wk**	**minus**	**17806 hrs/wk**	**=**	**14hrs/wk**

Non-Structured Exercise 10,000 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Martial Arts	3.0%	875	x	2 hrs/wk	1750 hrs/wk	125 SF/user	80 stas.		
Kick Boxing	2.2%	636	x	2 hrs/wk	1273 hrs/wk	125 SF/user	80 stas.		
TOTALS		**1511**			**3022.76 hrs/wk**	**125 SF/user**	**80 stas.**		**8000hrs/wk**
PEAK ATTENDANCE	**80%**	**of Stations in Use**					**64 stas.**		
PEAK UTILIZATION RATE	**50%**	**of Hours of Operation**		**=**	**50 hrs/wk**	**x**	**64 stas.**	**=**	**3200hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**3200hrs/wk**	**minus**	**3022.8 hrs/wk**	**=**	**177hrs/wk**

Fitness Module (Weight/Cardio) 46,000 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Exercising with Equipment	24.5%	7251	x	3 hrs/wk	21753 hrs/wk	56 SF/user	824 stas.		
TOTALS		**7251**			**21753 hrs/wk**	**56 SF/user**	**824 stas.**		**82400hrs/wk**
PEAK ATTENDANCE	**80%**	**of Stations in Use**					**659 stas.**		
PEAK UTILIZATION RATE	**90%**	**of Hours of Operation**		**=**	**90 hrs/wk**	**x**	**659 stas.**	**=**	**59328hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**59328hrs/wk**	**minus**	**21753 hrs/wk**	**=**	**37575hrs/wk**

Fitness Module (Weight/Cardio) 46,000 SF	LNS Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Exercising with Equipment	65.0%	19206	x	3 hrs/wk	57618 hrs/wk	56 SF/user	824 stas.		
TOTALS		**19206**			**57618 hrs/wk**	**56 SF/user**	**824 stas.**		**82400hrs/wk**
PEAK ATTENDANCE	**80%**	**of Stations in Use**					**659 stas.**		
PEAK UTILIZATION RATE	**90%**	**of Hours of Operation**		**=**	**90 hrs/wk**	**x**	**659 stas.**	**=**	**59328hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**59328hrs/wk**	**minus**	**57618 hrs/wk**	**=**	**1710hrs/wk**

Gymnasium Module 82,200 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Court Size is 50 x 94 for a total playing area of:						47,000 SF	10 court/s		
Volleyball	6.4%	1904	x	3 hrs/wk	5712 hrs/wk	392 SF/user	160 players		
Basketball	18.3%	5418	x	3 hrs/wk	16253 hrs/wk	470 SF/user	140 players		
TOTALS (Average for SF/Per and Stations)		**7322**			**21966 hrs/wk**	**431 SF/user**	**150 players**		**15000hrs/wk**
PEAK ATTENDANCE	**100%**	**of Stations in Use**					**150 players**		
PEAK UTILIZATION RATE	**60%**	**of Hours of Operation**		**=**	**60 hrs/wk**	**x**	**150 players**	**=**	**9000hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**9000hrs/wk**	**minus**	**21966 hrs/wk**	**=**	**-12966hrs/wk**

Note: VB assumes 12 players + 4 rotating players for each court. BB assumes 10 players + 4 waiting to rotate in for each court.

Racquetball Courts 6,800 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Racquetball	3.1%	921	x	2 hrs/wk	1843 hrs/wk	212.5 SF/user	32 occup.		
TOTALS		**921**			**1843 hrs/wk**	**212.5 SF/user**	**32 occup.**		**3200hrs/wk**
PEAK ATTENDANCE	**100%**	**of Stations in Use**					**32 occup.**		
PEAK UTILIZATION RATE	**50%**	**of Hours of Operation**		**=**	**50 hrs/wk**	**x**	**32 occup.**	**=**	**1600hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**1600hrs/wk**	**minus**	**1843 hrs/wk**	**=**	**-243hrs/wk**

Jogging Track 6,400 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Running / Jogging	14.6%	4328	x	2 hrs/wk	8656 hrs/wk		150 occup.		
Exercise Walking	28.8%	8501	x	2 hrs/wk	17001 hrs/wk		150 occup.		
TOTALS		**12828**			**25657 hrs/wk**		**150 occup.**		**15000hrs/wk**
PEAK ATTENDANCE	**60%**	**of Stations in Use**					**90 occup.**		
PEAK UTILIZATION RATE	**80%**	**of Hours of Operation**		**=**	**80 hrs/wk**	**x**	**90 occup.**	**=**	**7200hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**7200hrs/wk**	**minus**	**25657 hrs/wk**	**=**	**-18457hrs/wk**

Maximum authorized population of 45,000 - 100 hours of operation per week:

Base Population: (40,001-45,000)

Aerobic Exercise 20,250 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Aerobic Exercising	11.4%	3783	x	3 hrs/wk	11350 hrs/wk	50 SF/user	405 stas.		
Step Aerobics	3.0%	1005	x	3 hrs/wk	3016 hrs/wk	50 SF/user	405 stas.		
Calisthenics	5.7%	1889	x	3 hrs/wk	5667 hrs/wk	50 SF/user	405 stas.		
TOTALS		**6677**			**20032 hrs/wk**	**50 SF/user**	**405 stas.**		**40500hrs/wk**
PEAK ATTENDANCE	**90%**	**of Stations in Use**					**365 stas.**		
PEAK UTILIZATION RATE	**55%**	**of Hours of Operation**		**=**	**55 hrs/wk**	**x**	**365 stas.**	**=**	**20048hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**20048hrs/wk**	**minus**	**20032 hrs/wk**	**=**	**15hrs/wk**

Non-Structured Exercise 11,250 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Martial Arts	3.0%	984	x	2 hrs/wk	1969 hrs/wk	125 SF/user	90 stas.		
Kick Boxing	2.2%	716	x	2 hrs/wk	1432 hrs/wk	125 SF/user	90 stas.		
TOTALS		**1700**			**3400.6 hrs/wk**	**125 SF/user**	**90 stas.**		**9000hrs/wk**
PEAK ATTENDANCE	**80%**	**of Stations in Use**					**72 stas.**		
PEAK UTILIZATION RATE	**50%**	**of Hours of Operation**		**=**	**50 hrs/wk**	**x**	**72 stas.**	**=**	**3600hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**3600hrs/wk**	**minus**	**3400.6 hrs/wk**	**=**	**199hrs/wk**

Fitness Module (Weight/Cardio) 51,750 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Exercising with Equipment	24.5%	8158	x	3 hrs/wk	24473 hrs/wk	56 SF/user	927 stas.		
TOTALS		**8158**			**24473 hrs/wk**	**56 SF/user**	**927 stas.**		**92700hrs/wk**
PEAK ATTENDANCE	**80%**	**of Stations in Use**					**742 stas.**		
PEAK UTILIZATION RATE	**90%**	**of Hours of Operation**		**=**	**90 hrs/wk**	**x**	**742 stas.**	**=**	**66744hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**66744hrs/wk**	**minus**	**24473 hrs/wk**	**=**	**42271hrs/wk**

Fitness Module (Weight/Cardio) 51,750 SF	LNS Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Exercising with Equipment	65.0%	21607	x	3 hrs/wk	64820 hrs/wk	56 SF/user	927 stas.		
TOTALS		**21607**			**64820 hrs/wk**	**56 SF/user**	**927 stas.**		**92700hrs/wk**
PEAK ATTENDANCE	**80%**	**of Stations in Use**					**742 stas.**		
PEAK UTILIZATION RATE	**90%**	**of Hours of Operation**		**=**	**90 hrs/wk**	**x**	**742 stas.**	**=**	**66744hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**66744hrs/wk**	**minus**	**64820 hrs/wk**	**=**	**1924hrs/wk**

Gymnasium Module 90,600 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Court Size is 50 x 94 for a total playing area of:						51,700 SF	11 court/s		
Volleyball	6.4%	2142	x	3 hrs/wk	6426 hrs/wk	392 SF/user	176 players		
Basketball	18.3%	6095	x	3 hrs/wk	18285 hrs/wk	470 SF/user	154 players		
TOTALS (Average for SF/Per and Stations)		**8237**			**24711 hrs/wk**	**431 SF/user**	**165 players**		**16500hrs/wk**
PEAK ATTENDANCE	**100%**	**of Stations in Use**					**165 players**		
PEAK UTILIZATION RATE	**60%**	**of Hours of Operation**		**=**	**60 hrs/wk**	**x**	**165 players**	**=**	**9900hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**9900hrs/wk**	**minus**	**24711 hrs/wk**	**=**	**-14811hrs/wk**

Note: VB assumes 12 players + 4 rotating players for each court. BB assumes 10 players + 4 waiting to rotate in for each court.

Racquetball Courts 7,650 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Racquetball	3.1%	1036	x	2 hrs/wk	2073 hrs/wk	212.5 SF/user	36 occup.		
TOTALS		**1036**			**2073 hrs/wk**	**212.5 SF/user**	**36 occup.**		**3600hrs/wk**
PEAK ATTENDANCE	**100%**	**of Stations in Use**					**36 occup.**		
PEAK UTILIZATION RATE	**50%**	**of Hours of Operation**		**=**	**50 hrs/wk**	**x**	**36 occup.**	**=**	**1800hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**1800hrs/wk**	**minus**	**2073 hrs/wk**	**=**	**-273hrs/wk**

Jogging Track 6,400 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Running / Jogging	14.6%	4869	x	2 hrs/wk	9737 hrs/wk		150 occup.		
Exercise Walking	28.8%	9563	x	2 hrs/wk	19127 hrs/wk		150 occup.		
TOTALS		**14432**			**28864 hrs/wk**		**150 occup.**		**15000hrs/wk**
PEAK ATTENDANCE	**60%**	**of Stations in Use**					**90 occup.**		
PEAK UTILIZATION RATE	**80%**	**of Hours of Operation**		**=**	**80 hrs/wk**	**x**	**90 occup.**	**=**	**7200hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**7200hrs/wk**	**minus**	**28864 hrs/wk**	**=**	**-21664hrs/wk**

Maximum authorized population of 50,000 - 100 hours of operation per week:

Base Population: (45,001-50,000)

Aerobic Exercise 22,500 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Aerobic Exercising	11.4%	4204	x	3 hrs/wk	12611 hrs/wk	50 SF/user	450 stas.		
Step Aerobics	3.0%	1117	x	3 hrs/wk	3351 hrs/wk	50 SF/user	450 stas.		
Calisthenics	5.7%	2099	x	3 hrs/wk	6296 hrs/wk	50 SF/user	450 stas.		
TOTALS		**7419**			**22258 hrs/wk**	**50 SF/user**	**450 stas.**		**45000hrs/wk**
PEAK ATTENDANCE	**90%**	**of Stations in Use**					**405 stas.**		
PEAK UTILIZATION RATE	**55%**	**of Hours of Operation**		**=**	**55 hrs/wk**	**x**	**405 stas.**	**=**	**22275hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**22275hrs/wk**	**minus**	**22258 hrs/wk**	**=**	**17hrs/wk**

Non-Structured Exercise 12500 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Martial Arts	3.0%	1094	x	2 hrs/wk	2187 hrs/wk	125 SF/user	100 stas.		
Kick Boxing	2.2%	796	x	2 hrs/wk	1591 hrs/wk	125 SF/user	100 stas.		
TOTALS		**1889**			**3778.45 hrs/wk**	**125 SF/user**	**100 stas.**		**10000hrs/wk**
PEAK ATTENDANCE	**80%**	**of Stations in Use**					**80 stas.**		
PEAK UTILIZATION RATE	**50%**	**of Hours of Operation**		**=**	**50 hrs/wk**	**x**	**80 stas.**	**=**	**4000hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**4000hrs/wk**	**minus**	**3778.4 hrs/wk**	**=**	**222hrs/wk**

Fitness Module (Weight/Cardio) 57,500 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Exercising with Equipment	24.5%	9064	x	3 hrs/wk	27192 hrs/wk	56 SF/user	1030 stas.		
TOTALS		**9064**			**27192 hrs/wk**	**56 SF/user**	**1030 stas.**		**103000hrs/wk**
PEAK ATTENDANCE	**80%**	**of Stations in Use**					**824 stas.**		
PEAK UTILIZATION RATE	**90%**	**of Hours of Operation**		**=**	**90 hrs/wk**	**x**	**824 stas.**	**=**	**74160hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**74160hrs/wk**	**minus**	**27192 hrs/wk**	**=**	**46968hrs/wk**

Fitness Module (Weight/Cardio) 57,500 SF	LNS Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Exercising with Equipment	65.0%	24007	x	3 hrs/wk	72022 hrs/wk	56 SF/user	1030 stas.		
TOTALS		**24007**			**72022 hrs/wk**	**56 SF/user**	**1030 stas.**		**103000hrs/wk**
PEAK ATTENDANCE	**80%**	**of Stations in Use**					**824 stas.**		
PEAK UTILIZATION RATE	**90%**	**of Hours of Operation**		**=**	**90 hrs/wk**	**x**	**824 stas.**	**=**	**74160hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**74160hrs/wk**	**minus**	**72022 hrs/wk**	**=**	**2138hrs/wk**

Gymnasium Module 99,000 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Court Size is 50 x 94 for a total playing area of:						56,400 SF	12 court/s		
Volleyball	6.4%	2380	x	3 hrs/wk	7140 hrs/wk	392 SF/user	192 players		
Basketball	18.3%	6772	x	3 hrs/wk	20317 hrs/wk	470 SF/user	168 players		
TOTALS (Average for SF/Per and Stations)		**9152**			**27457 hrs/wk**	**431 SF/user**	**180 players**		**18000hrs/wk**
PEAK ATTENDANCE	**100%**	**of Stations in Use**					**180 players**		
PEAK UTILIZATION RATE	**60%**	**of Hours of Operation**		**=**	**60 hrs/wk**	**x**	**180 players**	**=**	**10800hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**10800hrs/wk**	**minus**	**27457 hrs/wk**	**=**	**-16657hrs/wk**

Note: VB assumes 12 players + 4 rotating players for each court. BB assumes 10 players + 4 waiting to rotate in for each court.

Racquetball Courts 8,500 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Racquetball	3.1%	1152	x	2 hrs/wk	2303 hrs/wk	212.5 SF/user	40 occup.		
TOTALS		**1152**			**2303 hrs/wk**	**212.5 SF/user**	**40 occup.**		**4000hrs/wk**
PEAK ATTENDANCE	**100%**	**of Stations in Use**					**40 occup.**		
PEAK UTILIZATION RATE	**50%**	**of Hours of Operation**		**=**	**50 hrs/wk**	**x**	**40 occup.**	**=**	**2000hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**2000hrs/wk**	**minus**	**2303 hrs/wk**	**=**	**-303hrs/wk**

Jogging Track 6,400 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Running / Jogging	14.6%	5410	x	2 hrs/wk	10819 hrs/wk		150 occup.		
Exercise Walking	28.8%	10626	x	2 hrs/wk	21252 hrs/wk		150 occup.		
TOTALS		**16036**			**32071 hrs/wk**		**150 occup.**		**15000hrs/wk**
PEAK ATTENDANCE	**60%**	**of Stations in Use**					**90 occup.**		
PEAK UTILIZATION RATE	**80%**	**of Hours of Operation**		**=**	**80 hrs/wk**	**x**	**90 occup.**	**=**	**7200hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**7200hrs/wk**	**minus**	**32071 hrs/wk**	**=**	**-24871hrs/wk**

Maximum authorized population of 55,000 - 100 hours of operation per week:

Base Population: (50,001-55,000)

Aerobic Exercise 24,750 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Aerobic Exercising	11.4%	4624	x	3 hrs/wk	13872 hrs/wk	50 SF/user	495 stas.		
Step Aerobics	3.0%	1229	x	3 hrs/wk	3686 hrs/wk	50 SF/user	495 stas.		
Calisthenics	5.7%	2309	x	3 hrs/wk	6926 hrs/wk	50 SF/user	495 stas.		
TOTALS		**8161**			**24484 hrs/wk**	**50 SF/user**	**495 stas.**		**49500hrs/wk**
PEAK ATTENDANCE	**90%**	**of Stations in Use**					**446 stas.**		
PEAK UTILIZATION RATE	**55%**	**of Hours of Operation**		**=**	**55 hrs/wk**	**x**	**446 stas.**	**=**	**24503hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**24503hrs/wk**	**minus**	**24484 hrs/wk**	**=**	**19hrs/wk**

Non-Structured Exercise 13,750 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Martial Arts	3.0%	1203	x	2 hrs/wk	2406 hrs/wk	125 SF/user	110 stas.		
Kick Boxing	2.2%	875	x	2 hrs/wk	1750 hrs/wk	125 SF/user	110 stas.		
TOTALS		**2078**			**4156.29 hrs/wk**	**125 SF/user**	**110 stas.**		**11000hrs/wk**
PEAK ATTENDANCE	**80%**	**of Stations in Use**					**88 stas.**		
PEAK UTILIZATION RATE	**50%**	**of Hours of Operation**		**=**	**50 hrs/wk**	**x**	**88 stas.**	**=**	**4400hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**4400hrs/wk**	**minus**	**4156.3 hrs/wk**	**=**	**244hrs/wk**

Fitness Module (Weight/Cardio) 63,250 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Exercising with Equipment	24.5%	9970	x	3 hrs/wk	29911 hrs/wk	56 SF/user	1133 stas.		
TOTALS		**9970**			**29911 hrs/wk**	**56 SF/user**	**1133 stas.**		**113300hrs/wk**
PEAK ATTENDANCE	**80%**	**of Stations in Use**					**906 stas.**		
PEAK UTILIZATION RATE	**90%**	**of Hours of Operation**		**=**	**90 hrs/wk**	**x**	**906 stas.**	**=**	**81576hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**81576hrs/wk**	**minus**	**29911 hrs/wk**	**=**	**51665hrs/wk**

Fitness Module (Weight/Cardio) 63,250 SF	LNS Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Exercising with Equipment	65.0%	26408	x	3 hrs/wk	79224 hrs/wk	56 SF/user	1133 stas.		
TOTALS		**26408**			**79224 hrs/wk**	**56 SF/user**	**1133 stas.**		**113300hrs/wk**
PEAK ATTENDANCE	**80%**	**of Stations in Use**					**906 stas.**		
PEAK UTILIZATION RATE	**90%**	**of Hours of Operation**		**=**	**90 hrs/wk**	**x**	**906 stas.**	**=**	**81576hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**81576hrs/wk**	**minus**	**79224 hrs/wk**	**=**	**2352hrs/wk**

Gymnasium Module 107,400 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Court Size is 50 x 94 for a total playing area of:						61,100 SF	13 court/s		
Volleyball	6.4%	2618	x	3 hrs/wk	7854 hrs/wk	392 SF/user	208 players		
Basketball	18.3%	7449	x	3 hrs/wk	22348 hrs/wk	470 SF/user	182 players		
TOTALS (Average for SF/Per and Stations)		**10068**			**30203 hrs/wk**	**431 SF/user**	**195 players**		**19500hrs/wk**
PEAK ATTENDANCE	**100%**	**of Stations in Use**					**195 players**		
PEAK UTILIZATION RATE	**60%**	**of Hours of Operation**		**=**	**60 hrs/wk**	**x**	**195 players**	**=**	**11700hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**11700hrs/wk**	**minus**	**30203 hrs/wk**	**=**	**-18503hrs/wk**

Note: VB assumes 12 players + 4 rotating players for each court. BB assumes 10 players + 4 waiting to rotate in for each court.

Racquetball Courts 9,350 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Racquetball	3.1%	1267	x	2 hrs/wk	2534 hrs/wk	212.5 SF/user	44 occup.		
TOTALS		**1267**			**2534 hrs/wk**	**212.5 SF/user**	**44 occup.**		**4400hrs/wk**
PEAK ATTENDANCE	**100%**	**of Stations in Use**					**44 occup.**		
PEAK UTILIZATION RATE	**50%**	**of Hours of Operation**		**=**	**50 hrs/wk**	**x**	**44 occup.**	**=**	**2200hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**2200hrs/wk**	**minus**	**2534 hrs/wk**	**=**	**-334hrs/wk**

Jogging Track 6,400 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Running / Jogging	14.6%	5951	x	2 hrs/wk	11901 hrs/wk		150 occup.		
Exercise Walking	28.8%	11689	x	2 hrs/wk	23377 hrs/wk		150 occup.		
TOTALS		**17639**			**35278 hrs/wk**		**150 occup.**		**15000hrs/wk**
PEAK ATTENDANCE	**60%**	**of Stations in Use**					**90 occup.**		
PEAK UTILIZATION RATE	**80%**	**of Hours of Operation**		**=**	**80 hrs/wk**	**x**	**90 occup.**	**=**	**7200hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**7200hrs/wk**	**minus**	**35278 hrs/wk**	**=**	**-28078hrs/wk**

Maximum authorized population of 60,000 - 100 hours of operation per week:

Base Population: (55,001-60,000)

Aerobic Exercise 27,000 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Aerobic Exercising	11.4%	5044	x	3 hrs/wk	15133 hrs/wk	50 SF/user	540 stas.		
Step Aerobics	3.0%	1340	x	3 hrs/wk	4021 hrs/wk	50 SF/user	540 stas.		
Calisthenics	5.7%	2519	x	3 hrs/wk	7556 hrs/wk	50 SF/user	540 stas.		
TOTALS		**8903**			**26710 hrs/wk**	**50 SF/user**	**540 stas.**		**54000hrs/wk**
PEAK ATTENDANCE	**90%**	**of Stations in Use**					**486 stas.**		
PEAK UTILIZATION RATE	**55%**	**of Hours of Operation**		**=**	**55 hrs/wk**	**x**	**486 stas.**	**=**	**26730hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**26730hrs/wk**	**minus**	**26709.74 hrs/wk**	**=**	**20hrs/wk**

Non-Structured Exercise 15,000 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Martial Arts	3.0%	1312	x	2 hrs/wk	2625 hrs/wk	125 SF/user	120 stas.		
Kick Boxing	2.2%	955	x	2 hrs/wk	1909 hrs/wk	125 SF/user	120 stas.		
TOTALS		**2267**			**4534.135 hrs/wk**	**125 SF/user**	**120 stas.**		**12000hrs/wk**
PEAK ATTENDANCE	**80%**	**of Stations in Use**					**96 stas.**		
PEAK UTILIZATION RATE	**50%**	**of Hours of Operation**		**=**	**50 hrs/wk**	**x**	**96 stas.**	**=**	**4800hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**4800hrs/wk**	**minus**	**4534.135 hrs/wk**	**=**	**266hrs/wk**

Fitness Module (Weight/Cardio) 69,000 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Exercising with Equipment	24.5%	10877	x	3 hrs/wk	32630 hrs/wk	56 SF/user	1236 stas.		
TOTALS		**10877**			**32630 hrs/wk**	**56 SF/user**	**1236 stas.**		**123600hrs/wk**
PEAK ATTENDANCE	**80%**	**of Stations in Use**					**989 stas.**		
PEAK UTILIZATION RATE	**90%**	**of Hours of Operation**		**=**	**90 hrs/wk**	**x**	**989 stas.**	**=**	**88992hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**88992hrs/wk**	**minus**	**32630 hrs/wk**	**=**	**56362hrs/wk**

Fitness Module (Weight/Cardio) 69,000 SF	LNS Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Exercising with Equipment	65.0%	28809	x	3 hrs/wk	86427 hrs/wk	56 SF/user	1236 stas.		
TOTALS		**28809**			**86427 hrs/wk**	**56 SF/user**	**1236 stas.**		**123600hrs/wk**
PEAK ATTENDANCE	**80%**	**of Stations in Use**					**989 stas.**		
PEAK UTILIZATION RATE	**90%**	**of Hours of Operation**		**=**	**90 hrs/wk**	**x**	**989 stas.**	**=**	**88992hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**88992hrs/wk**	**minus**	**86427 hrs/wk**	**=**	**2565hrs/wk**

Gymnasium Module 115,800 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Court Size is 50 x 94 for a total playing area of:						65,800 SF	14 court/s		
Volleyball	6.4%	2856	x	3 hrs/wk	8568 hrs/wk	392 SF/user	224 players		
Basketball	18.3%	8127	x	3 hrs/wk	24380 hrs/wk	470 SF/user	196 players		
TOTALS (Average for SF/Per and Stations)		**10983**			**32948 hrs/wk**	**431 SF/user**	**210 players**		**21000hrs/wk**
PEAK ATTENDANCE	**100%**	**of Stations in Use**					**210 players**		
PEAK UTILIZATION RATE	**60%**	**of Hours of Operation**		**=**	**60 hrs/wk**	**x**	**210 players**	**=**	**12600hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**12600hrs/wk**	**minus**	**32948 hrs/wk**	**=**	**-20348hrs/wk**

Note: VB assumes 12 players + 4 rotating players for each court. BB assumes 10 players + 4 waiting to rotate in for each court.

Racquetball Courts 10,200 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Racquetball	3.1%	1382	x	2 hrs/wk	2764 hrs/wk	212.5 SF/user	48 occup.		
TOTALS		**1382**			**2764 hrs/wk**	**212.5 SF/user**	**48 occup.**		**4800hrs/wk**
PEAK ATTENDANCE	**100%**	**of Stations in Use**					**48 occup.**		
PEAK UTILIZATION RATE	**50%**	**of Hours of Operation**		**=**	**50 hrs/wk**	**x**	**48 occup.**	**=**	**2400hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**2400hrs/wk**	**minus**	**2764 hrs/wk**	**=**	**-364hrs/wk**

Jogging Track 6,400 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Running / Jogging	14.6%	6492	x	2 hrs/wk	12983 hrs/wk		150 occup.		
Exercise Walking	28.8%	12751	x	2 hrs/wk	25502 hrs/wk		150 occup.		
TOTALS		**19243**			**38485 hrs/wk**		**150 occup.**		**15000hrs/wk**
PEAK ATTENDANCE	**60%**	**of Stations in Use**					**90 occup.**		
PEAK UTILIZATION RATE	**80%**	**of Hours of Operation**		**=**	**80 hrs/wk**	**x**	**90 occup.**	**=**	**7200hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**7200hrs/wk**	**minus**	**38485 hrs/wk**	**=**	**-31285hrs/wk**

Maximum authorized population of 65,000 - 100 hours of operation per week:

Base Population: (60,001-65,000)

Aerobic Exercise 29,250 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Aerobic Exercising	11.4%	5465	x	3 hrs/wk	16394 hrs/wk	50 SF/user	585 stas.		
Step Aerobics	3.0%	1452	x	3 hrs/wk	4356 hrs/wk	50 SF/user	585 stas.		
Calisthenics	5.7%	2728	x	3 hrs/wk	8185 hrs/wk	50 SF/user	585 stas.		
TOTALS		**9645**			**28936 hrs/wk**	**50 SF/user**	**585 stas.**		**58500hrs/wk**
PEAK ATTENDANCE	**90%**	**of Stations in Use**					**527 stas.**		
PEAK UTILIZATION RATE	**55%**	**of Hours of Operation**		**=**	**55 hrs/wk**	**x**	**527 stas.**	**=**	**28958hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**28958hrs/wk**	**minus**	**28935.5 hrs/wk**	**=**	**22hrs/wk**

Non-Structured Exercise 16,250 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Martial Arts	3.0%	1422	x	2 hrs/wk	2843 hrs/wk	125 SF/user	130 stas.		
Kick Boxing	2.2%	1034	x	2 hrs/wk	2068 hrs/wk	125 SF/user	130 stas.		
TOTALS		**2456**			**4911.98 hrs/wk**	**125 SF/user**	**130 stas.**		**13000hrs/wk**
PEAK ATTENDANCE	**80%**	**of Stations in Use**					**104 stas.**		
PEAK UTILIZATION RATE	**50%**	**of Hours of Operation**		**=**	**50 hrs/wk**	**x**	**104 stas.**	**=**	**5200hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**5200hrs/wk**	**minus**	**4911.98 hrs/wk**	**=**	**288hrs/wk**

Fitness Module (Weight/Cardio) 74,750 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Exercising with Equipment	24.5%	11783	x	3 hrs/wk	35349 hrs/wk	56 SF/user	1339 stas.		
TOTALS		**11783**			**35349 hrs/wk**	**56 SF/user**	**1339 stas.**		**133900hrs/wk**
PEAK ATTENDANCE	**80%**	**of Stations in Use**					**1071 stas.**		
PEAK UTILIZATION RATE	**90%**	**of Hours of Operation**		**=**	**90 hrs/wk**	**x**	**1071 stas.**	**=**	**96408hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**96408hrs/wk**	**minus**	**35349 hrs/wk**	**=**	**61059hrs/wk**

Fitness Module (Weight/Cardio) 74,750 SF	LNS Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Exercising with Equipment	65.0%	31210	x	3 hrs/wk	93629 hrs/wk	56 SF/user	1339 stas.		
TOTALS		**31210**			**93629 hrs/wk**	**56 SF/user**	**1339 stas.**		**133900hrs/wk**
PEAK ATTENDANCE	**80%**	**of Stations in Use**					**1071 stas.**		
PEAK UTILIZATION RATE	**90%**	**of Hours of Operation**		**=**	**90 hrs/wk**	**x**	**1071 stas.**	**=**	**96408hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**96408hrs/wk**	**minus**	**93629 hrs/wk**	**=**	**2779hrs/wk**

Gymnasium Module 124,200 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Court Size is 50 x 94 for a total playing area of:						70,500 SF	15 court/s		
Volleyball	6.4%	3094	x	3 hrs/wk	9282 hrs/wk	392 SF/user	240 players		
Basketball	18.3%	8804	x	3 hrs/wk	26412 hrs/wk	470 SF/user	210 players		
TOTALS (Average for SF/Per and Stations)		**11898**			**35694 hrs/wk**	**431 SF/user**	**225 players**		**22500hrs/wk**
PEAK ATTENDANCE	**100%**	**of Stations in Use**					**225 players**		
PEAK UTILIZATION RATE	**60%**	**of Hours of Operation**		**=**	**60 hrs/wk**	**x**	**225 players**	**=**	**13500hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**13500hrs/wk**	**minus**	**35694 hrs/wk**	**=**	**-22194hrs/wk**

Note: VB assumes 12 players + 4 rotating players for each court. BB assumes 10 players + 4 waiting to rotate in for each court.

Racquetball Courts 11,050 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Racquetball	3.1%	1497	x	2 hrs/wk	2994 hrs/wk	212.5 SF/user	52 occup.		
TOTALS		**1497**			**2994 hrs/wk**	**212.5 SF/user**	**52 occup.**		**5200hrs/wk**
PEAK ATTENDANCE	**100%**	**of Stations in Use**					**52 occup.**		
PEAK UTILIZATION RATE	**50%**	**of Hours of Operation**		**=**	**50 hrs/wk**	**x**	**52 occup.**	**=**	**2600hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**2600hrs/wk**	**minus**	**2994 hrs/wk**	**=**	**-394hrs/wk**

Jogging Track 6,400 SF	Average Particip.	Projected Participants		Desired Times / Wk.	Desired Contact Hrs.	Max. SF/Person	Stations in Module		Available Contact Hrs.
Running / Jogging	14.6%	7033	x	2 hrs/wk	14065 hrs/wk		150 occup.		
Exercise Walking	28.8%	13814	x	2 hrs/wk	27627 hrs/wk		150 occup.		
TOTALS		**20846**			**41693 hrs/wk**		**150 occup.**		**15000hrs/wk**
PEAK ATTENDANCE	**60%**	**of Stations in Use**					**90 occup.**		
PEAK UTILIZATION RATE	**80%**	**of Hours of Operation**		**=**	**80 hrs/wk**	**x**	**90 occup.**	**=**	**7200hrs/wk**
AVAILABLE PEAK CONTACT HOURS FOR PROGRAMMING					**7200hrs/wk**	**minus**	**41693 hrs/wk**	**=**	**-34493hrs/wk**